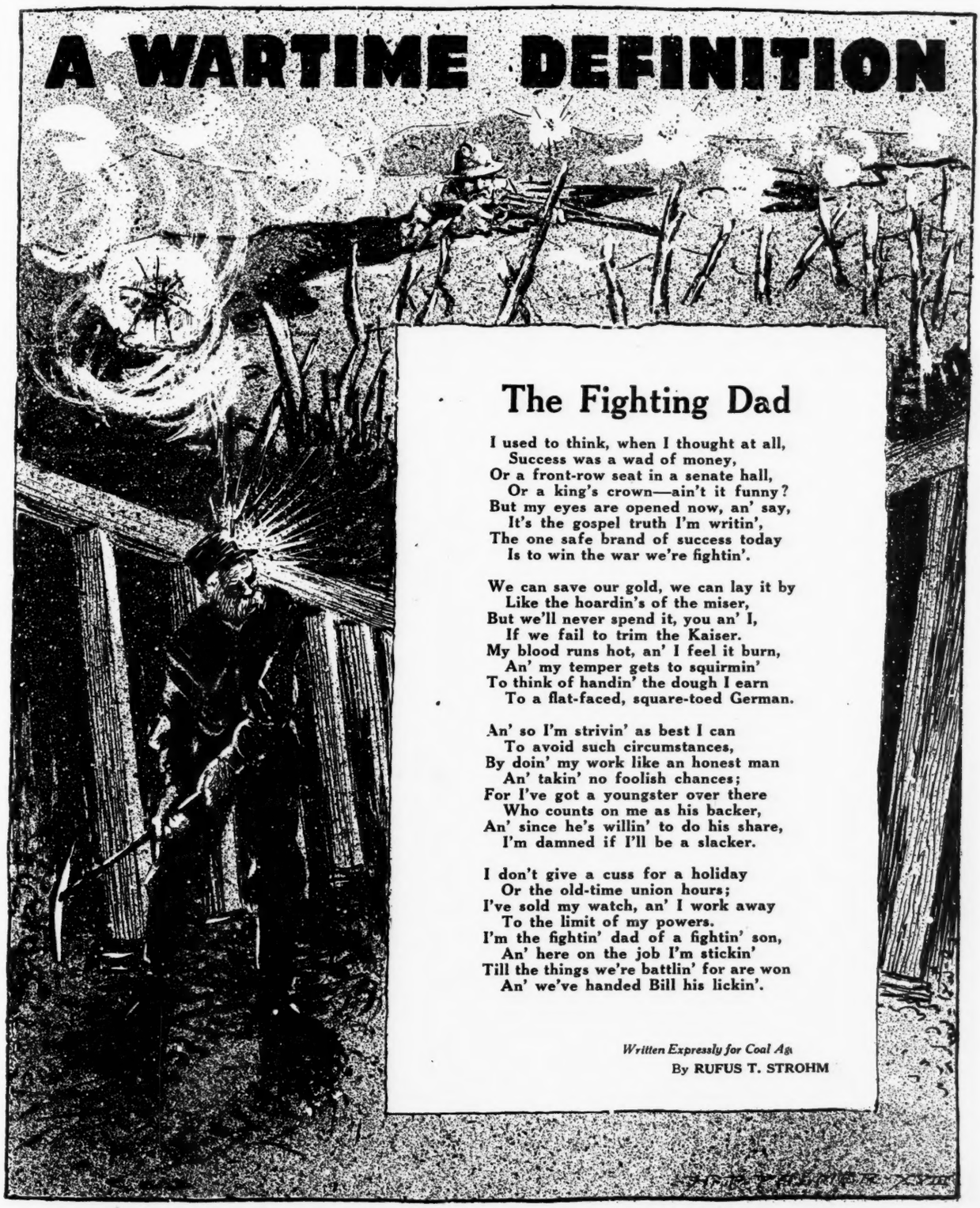
COAL AGE

Volume 13 NEW YORK, MARCH 23, 1918 Number 12



The Fighting Dad

I used to think, when I thought at all,
Success was a wad of money,
Or a front-row seat in a senate hall,
Or a king's crown—ain't it funny?
But my eyes are opened now, an' say,
It's the gospel truth I'm writin',
The one safe brand of success today
Is to win the war we're fightin'.

We can save our gold, we can lay it by
Like the hoardin's of the miser,
But we'll never spend it, you an' I,
If we fail to trim the Kaiser.
My blood runs hot, an' I feel it burn,
An' my temper gets to squirmin'
To think of handin' the dough I earn
To a flat-faced, square-toed German.

An' so I'm strivin' as best I can
To avoid such circumstances,
By doin' my work like an honest man
An' takin' no foolish chances;
For I've got a youngster over there
Who counts on me as his backer,
An' since he's willin' to do his share,
I'm damned if I'll be a slacker.

I don't give a cuss for a holiday
Or the old-time union hours;
I've sold my watch, an' I work away
To the limit of my powers.
I'm the fightin' dad of a fightin' son,
An' here on the job I'm stickin'
Till the things we're battlin' for are won
An' we've handed Bill his lickin'.

Written Expressly for Coal Age

By RUFUS T. STROHM

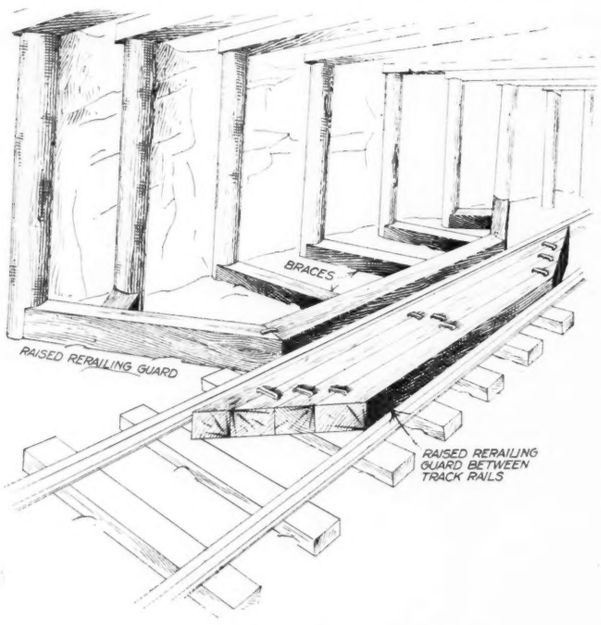
IDEAS AND SUGGESTIONS

A Simple Rerail

BY RALPH W. MAYER
Roslyn, Wash.

The Roslyn Fuel Co. uses a simple device for replacing derailed cars upon the track automatically. It is placed at the top of the slope just below the knuckle. Cars which are on the rails pass without touching it, but those which have become derailed are promptly replaced upon the rails. Heavy planking is spiked close against the outside of the rail, the top surface of the planking being as high as or a trifle higher than the top of the rail. A piece of 6 x 8-in. timber is spiked on top of this planking, parallel to the rail. This timber is placed just far enough from the rail so that the tread of the car wheel will clear it when the car is on the track. This timber should be 10 or 15 ft. long.

From both ends of this timber other timbers of the same size are placed at a long sloping angle to the rib of the incline, or entry. The side of these timbers next to the rail should be shod with iron to prevent the derailed cars from chewing into the wood, and to slide the cars over onto the rails easily. Braces are placed from these timbers extending back to the rib, or to



DEVICE TO REPLACE DERAILED CARS

the legs of the timber sets. The car wheels striking the long slanting timbers which are placed at an angle with the rail are crowded over to the rail and up onto it, the long timber parallel to the rail holding the wheel upon the rail.

Between the two track rails planking is spiked. The top surface of this planking is even with the top of the rails. Room for the flange of the car wheel is left next to the rail. Other timbers are spiked on top of this planking, just high enough to clear the axles of the cars. The under planking extends beyond the ends of the top timbers about 6 ft. The top timbers are laid tight up one against the other or skin to skin. Their ends are cut on a long slant, so that those next to one rail are about 10 or 12 ft. longer than those next to the opposite rail.

The long side of this rerailing guard between the tracks, should be placed next to the rail which has the outside rerailing guard. The ends of the timbers between the rails should be iron shod the same as the outside guards. These timbers catch the inside wheels of the derailed car and crowd them over onto the rail, while the guard outside the rails crowd the outside car wheels in a similar manner. The length of the inside and outside guards should be such that the car wheels strike the outside guard first and slightly before the wheels touch the guard between the rail.

Retiring Mine Locomotive Trucks

BY JACK L. BALL
Amsterdam, Ohio

The life of the tires on mine locomotive trucks varies. Sometimes it is necessary to replace such tires after four months' service; then again, they may last for a year or two, depending greatly on the actual working conditions, length of haul and to a considerable extent on the motorman. Occasionally we find men who use sand when it is not at all necessary, and sand is injurious to both tire and rail; others sometimes grind away just to see the sparks fly. Poor contact causes arcing, which shortens the life of a tire. The purpose of this article, however, is not to discuss why tires wear out, but to give a few suggestions to those who may have to retire a set of trucks.

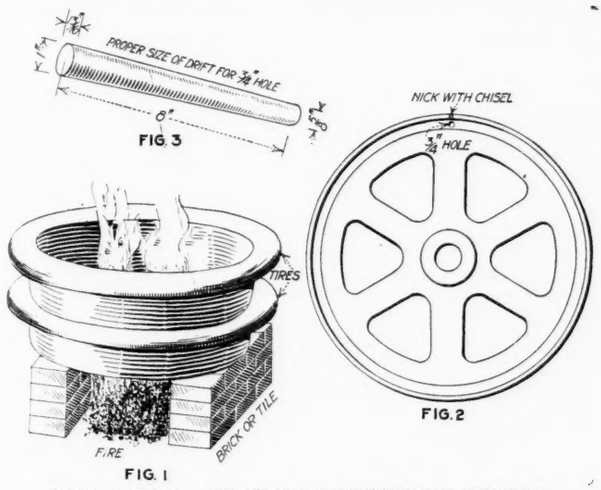
Assume that the locomotive to be retired is outside of the mine; then, by using a few bricks, you can build a support like that shown in Fig. 1. Place the tires one on top of another and build a good fire. If you have four tires it is better to build two fires, as a more even heat can be secured by placing two rather than four tires over each fire.

With a ratchet or some other kind of portable drill bore a ¾-in. hole entirely through the center of the tire to be removed. This hole should be drilled over a spoke if possible (see Fig. 2). Then take a cold chisel and nick the tire deeply, directly over the drilled hole. Insert the drift (see Fig. 3); then with the aid of a sledge little trouble will be experienced in loosening the tire. The sledgeman should stand to one side of the drift when sledging, as the drift may fly out with sufficient force to break an arm or a leg.

It is a good plan to drill all the holes and then remove the tires, or if a helper is employed the work may be arranged to any agreeable advantage. By the

time all the old tires are removed the new ones should be hot enough to shrink in place.

New tires should not be heated to any degree of color. An easy test is to throw a little water on them, and if they are hot enough the water is instantly converted into steam; in other words, the water will "sizzle." It should be borne in mind that a tire which is too hot is liable to warp out of round. It is sometimes im-



FIGS. 1 TO 3. RETIRING LOCOMOTIVE TRUCKS

possible to get a tight fit on account of the tires having expanded too much; again, unless care is exercised during the shrinking process, tires are liable to burst through undue contractional strains.

When the tires are at about the right temperature put one in place. A bucket of water and some waste or old rags should be close by. Wet the waste or rags, and apply them to the tire until it is comfortably warm to the hand. This cooling should be done gradually. Do not use a stream of water from a hose, as this sometimes causes a great deal of trouble.

Where an oxyacetylene torch is available the tire can be cut away more quickly than by the drill and drift method. In using a torch, however, one thing should be borne in mind—the channel should be cut evenly all the way across. When the cut is deep enough the tire will break away, owing to the strain caused by the shrinkage.

The Mining Camp Pest

BY OBSERVER

Rosemont, W. Va.

For creating dissension, disturbance and general misunderstanding, the mining-camp gossip belongs in the same class with the I. W. W. and the German propagandist. One woman of this sort can cause more trouble and do more to impede the smooth running of a mining plant than would seem humanly possible. And every community seems to have at least one of these pests. If she is a miner's wife, that is bad enough; but if she happens to be an official's wife, no matter how subordinate his position, the situation is doubly serious. Husbands, most generally, have a habit of listening, at least with one ear, to what their wives say. And if a man is narrow enough to give credit to everything he hears, he makes a perfect medium for his gossiping wife's activities.

Often one woman spreads dissatisfaction among her neighbors by repeating conversations, purely fictitious or with a slight degree of truth, which conversations were supposed to have taken place between a superintendent, mine foreman or some other company official and her husband and, usually, containing some criticism of some employee, whose ears it finally reaches; or that improvements are to be made to the house which she occupies and to no other house; or her "man" is to have the best working place; or some other apparently idle, but nevertheless dissension-provoking gossip.

The worst feature of this evil is that there is nothing one can put one's finger on. A man cannot be discharged simply because his wife gossips. Yet if he possesses a wife or family with a fertile imagination, coupled with a malicious and agile tongue, he may as well say farewell to his hopes of a better job.

Though there is a fixed price for wheat, coal and other things, there seems to be no restrictions of any kind on a woman's tongue; and the damage that it often does is incalculable.

Safe Loads for Beams of T-Rails

BY SHELDON SMILLIE

Indiana, Penn.

Owing to their availability at all times, old and new T-rails are being constantly used around mines as beams or reinforcing for concrete.

The accompanying table giving the safe load for various spans was calculated for the convenience of mine superintendents and foremen. It is based on new rail of the American Society of Civil Engineers standard sections for the weights given. It gives the net safe load uniformly distributed over the entire span, the weight of the beam itself being deducted from the figures. Allowance must of course be made for old rail based on its condition and length of service. Rail deteriorates rapidly when used for electric haulage and halving the safe load for rails having had much service would not be too great an allowance. If the load is concentrated at or near the center of the span the figures in the table should be reduced one-half.

In reinforcing concrete slabs or roofs it is safest to consider the steel as carrying all the load and the weight of the concrete as well, since the concrete itself is valueless in tension. A crack on the under side might throw the upper side counted on for compression into tension, thus causing failure.

SAFE-LOADS FOR T-RAIL BEAMS

Span, in Feet	Rail Weights 12 Lb.	16 Lb.	25 Lb.	30 Lb.	35 Lb.	40 Lb.	45 Lb.	50 Lb.	60 Lb.	80 Lb.
4	1,668	2,570	4,765	6,725	7,910	9,547	11,420	13,563	17,810	26,843
5	1,325	2,120	3,790	5,280	6,310	7,613	9,095	10,816	14,200	21,416
6	1,092	1,755	3,145	4,380	5,235	6,320	7,535	8,950	11,700	18,800
7	923	1,490	2,678	3,745	4,480	5,327	6,445	7,643	10,080	15,213
8	803	1,295	2,335	3,250	3,885	4,683	5,605	6,656	8,765	13,256
9	695	1,140	2,060	2,870	3,440	4,130	4,955	5,890	7,760	11,740
10	630	1,013	1,829	2,565	2,961	3,705	4,430	5,273	6,940	10,507
11	565	914	1,650	2,315	2,767	3,360	4,005	4,766	6,280	9,496
12	510	827	1,492	2,100	2,512	3,027	3,640	4,340	5,710	8,650
13	462	752	1,363	1,907	2,300	2,770	3,330	3,963	5,240	7,928
14	420	686	1,249	1,761	2,065	2,552	3,065	3,651	4,820	7,316
15	375	642	1,150	1,625	1,945	2,350	2,835	3,380	4,470	6,780
16	353	582	1,068	1,503	1,799	2,163	2,625	3,133	4,150	6,303
17	326	538	966	1,397	1,667	2,023	2,445	2,916	3,860	5,880
18	296	497	905	1,298	1,552	1,878	2,275	2,725	3,610	5,500
19	271	460	842	1,209	1,445	1,755	2,130	2,548	3,380	5,163
20	250	426	783	1,125	1,348	1,640	1,995	2,386	3,175	4,846
21	230	396	727	1,054	1,260	1,532	1,870	2,240	2,985	4,570
22	....	368	678	985	1,179	1,434	1,755	2,108	2,810	4,313
23	....	342	630	923	1,104	1,345	1,655	1,960	2,690	4,066
24	....	317	587	861	1,033	1,262	1,552	1,870	2,500	3,850

Economy of Electricity Over Steam for Colliery Power Purposes*

By R. E. HOBART
Mechanical Superintendent, Lehigh Coal and Navigation Co., Lansford, Penn.

THE development of the Hauto power plant and the claims made by various engineers that electricity was more economical than steam for power purposes in and about the mines, led the Lehigh Coal and Navigation Co., in 1911, to conduct a test to ascertain the consumption of power used by a large steam hoisting engine. The question being one on which no reliable information could be found, and the opinion of various engineers differing to such an extent, it was decided that a test under actual operating conditions was necessary. This was arranged for at one of the collieries. The engine selected was a 30 x 60-in. piston-valve engine of modern type, and comparatively new.

The boiler plant from which the hoist received its power was about 600 ft. from the engine, the latter being fed by a 10-in. steam line insulated with magnesia pipe covering. Two batteries of the boiler plant, aggregating 1200 hp., were cut off and fed into a separate steam line leading direct to the hoist engine. Steam auxiliaries, consisting of feed-water pump and blowers, were fed by the boilers in test, and their consumption charged against the hoist. A barrel weighing device was installed, as it was felt that this would be the most accurate way of determining the consumption of water. The fuel, No. 3 buckwheat, was carefully weighed, and every precaution was taken to make the test accurate in every particular.

Test Was Run for One Week

The test was run for one week, or a total of 168 hours. A record was kept of the number of trips hoisted or lowered, and continuous indicator cards were taken. One particular set of cards was taken with the hoist operating balanced, and also with the hoist operating with no counterweight other than the empty cage, the coal in the car being weighed. This speed of the hoist was taken by means of a graphic recording instrument which registered the number of revolutions every 5 sec. From this record, speed-time curves were plotted.

The test was divided into two periods: working time and idle time. The hoist did not operate between the hours of 5:30 p.m. and 6:30 a.m., nor from 3:30 p.m. Saturday until 6:30 a.m. Monday morning. The actual working time, therefore, was 64 hours, and the idle time 104 hours for the week. The total weight of coal used in idle time was 108,075 lb., while the coal used in working time was 119,950 lb. From these figures, the amount of coal consumed per hour to cover standby losses would be $108{,}075 \div 104 = 1038$ lb. of coal per hour.

During the week, 1705 cars of coal were hoisted from a depth of 581 ft. A tabulation of test results is shown in Table I.

*Presented at the February, 1918, meeting of the American Institute of Mining Engineers, New York City.

From these results, it will be noticed that to the 104 idle hours, representing the period when the hoist was not operating, must be added the idle time occurring between hoists during the operating period, which makes a total of 156.2 hours, the actual hoisting time being only 11.82 hours in the week. From these surprising results, the Lehigh Coal and Navigation Co. felt that it would be advisable to use electric power at the new operation to be developed at No. 11 shaft.

It is a well-known fact, in the anthracite region, that the working time of a coal hoist is only from 8 to 9 hours in a day, the night hoist being intermittent. At the time the test was made very few electric hoists of this capacity were in operation, and most of the larger ones had either the Ward Leonard or Ilgner system of control, the only large induction hoists being in South Africa. Various hoist engineers were consulted on the different types of hoists using alternating current. Propositions were submitted on the Ward Leonard and Ilgner systems, as well as on the induction-motor type. All these hoists have their good and bad features. The Ward Leonard system consists of a motor-generator set in which an alternating-current motor is directly connected to a direct-current generator, which generator furnishes power to a direct-current hoist motor. The Ilgner system also consists of a motor-generator set, which drives a direct-current hoist motor, the generator being separately excited. By means of a flywheel and slip regulator, the load peak on the power system is practically eliminated. The other type of hoist is driven with an induction motor, with a polar-wound rotor to permit of the addition of external resistance to the rotor direct.

TABLE I. TABULATION OF RESULTS, HOISTING BY STEAM

Depth of shaft, ft.	581
Weight of coal per car, lb.	8,960
Coal used during 104 idle hours, lb.	108,075
Coal per hour idle, lb.	1,038
Trips during week	1,705
Actual time used in hoisting, sec., $1{,}705 \times 25$	42,625
Actual hours hoisting $42{,}625 \div (60 \times 60)$	11.82
Seconds during week	604,800
Seconds idle during week	562,175
Idle hours	156.2
Coal used during idle time, lb., $156.2 \times 1{,}038$	162,135
Coal used during hoisting, lb., $228{,}025 - 162{,}135$	65,890
Coal used per trip, lb., $65{,}890 \div 1{,}705$	38.6
Horsepower-hours per trip, $\frac{581 \times 8{,}960}{33{,}000 \times 60}$	2.63
Coal per horsepower-hour, lb., $\frac{38.6}{2.63}$	14.70

The lift at No. 11 shaft was 266 ft., and the desired number of cars to be hoisted per hour was 120. This short lift and the number of cars per hour would mean numerous peaks, which from the brief description given of the different systems might make it appear that the Ilgner system would have been the better one to use. However, when it was considered that the working day at that time consisted of 9 hours, with occasional hoisting during the remaining 15 hours of the day, and with

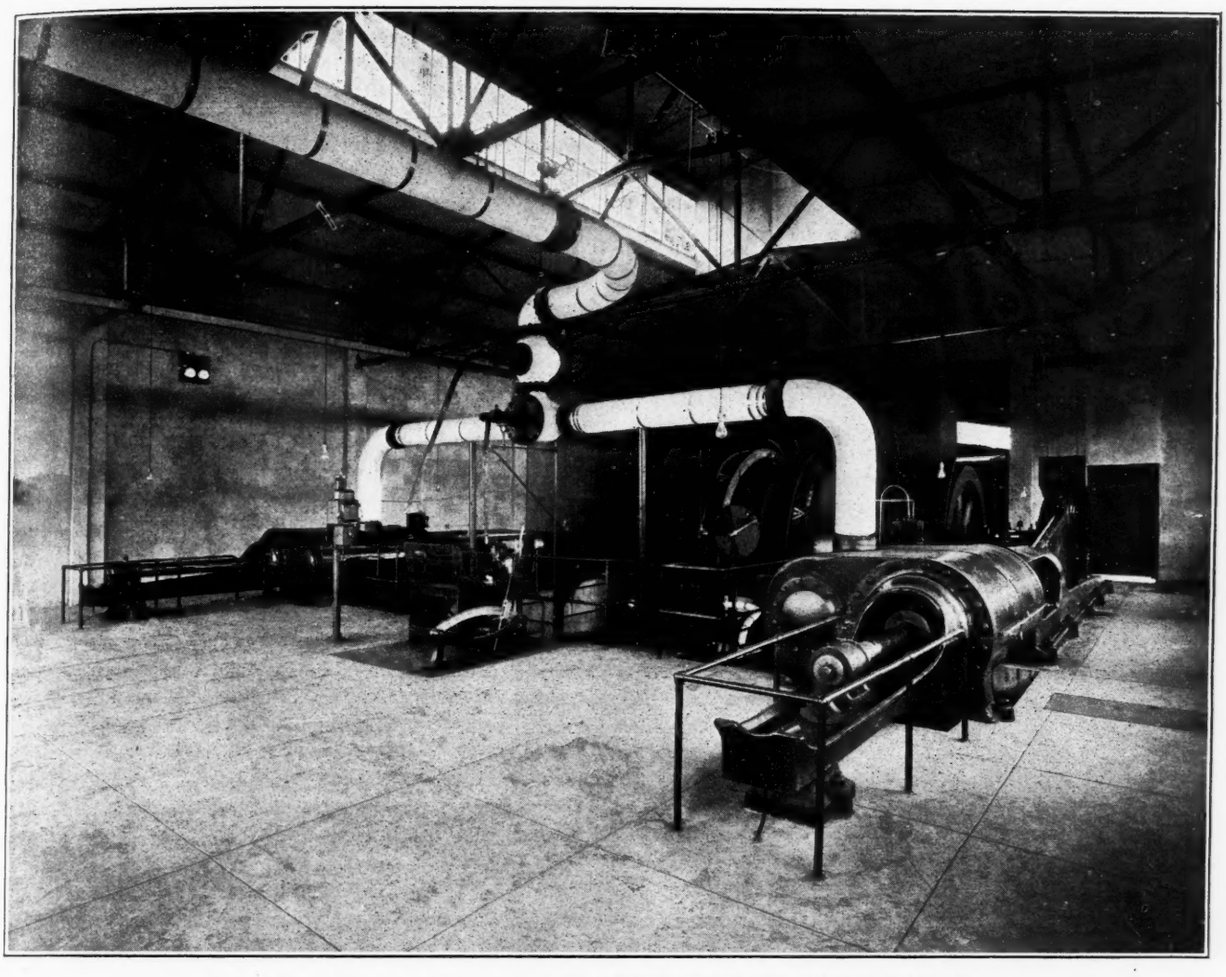


FIG. 1. STEAM HOIST, 30 x 60 IN., LEHIGH COAL AND NAVIGATION CO.

frequent stoppages for various reasons during the working time, it will readily be seen that the generator set would be operating continuously, whereas the actual work done by the hoist would be very little. The other disadvantage of the Ilgner system is its high first cost, the hoist costing about 60 per cent. more than an induction hoist. It was therefore decided to use a slip-ring induction-motor system. Its disadvantages of poor efficiency, low power factor and high load peaks in starting were offset by the fact that when the hoist is not working, no current is used for the hoisting system excepting the small amount necessary to run the pump for the liquid rheostat, which may be shut off at the will of the operator.

At all the company's operations, synchronous converters are used in connection with the mine haulage. It was found that there was sufficient converter capacity connected to the supply line to permit of a great deal of power-factor correction.

The next important feature connected with this hoist was to design and make a proper control system. The usual control for electric hoists up to that time consisted of a slow-down device at a predetermined point in the travel, or a device that would automatically operate the controller and apply the brake at a predetermined point. The overwind features were also included.

From experience with steam hoists, it was felt that this type of control would not do for electric hoists, on account of fluctuating loads. Many times loaded cars are hoisted without balance, and loaded cars are lowered at various times, and, what is more important, from 75 to 100 trips a day are made for raising or lowering men. To meet these varied conditions, the company insisted that the following features should be embodied in the control of this hoist:

1. Hoist must not over-travel in either direction.
2. It must be impossible for the operator to start hoist in wrong direction at either limit of travel.
3. Hoist must not back away, due to failure of power or overload.
4. Protection must be provided against overspeed, due to any cause whatever in any position of travel.
5. Emergency brake must set and power be interrupted if operator fails to retard hoist approaching landings. This value to be graduated and to be adjustable to meet conditions.
6. Hoist must not start return of power if operator has carelessly left lever in "on" position.
7. If control circuits become grounded, hoist must stop.
8. If operator fails to keep power brake in proper adjustment, emergency brakes must set and power must be interrupted, to remain so until operator has readjusted brake.

9. Hoist must be brought to rest and brake applied on loose drum before clutch can be disengaged.

10. It must be impossible to release brake on loose drum while clutch is disengaged.

11. Pawl must be provided, interlocking with clutch engine lock, this pawl to engage in loose drum before clutch can be released.

12. It must be impossible to operate hoist unless clutch is full "in" and locked.

13. Air reservoir must not be drained by emergency stopping of hoist.

14. There must be no delay in operation of hoist due to emergency stopping.

15. It must not be necessary for operator to call assistance in case of emergency stop, over-travel or otherwise.

16. For operating hoist, multiplicity of levers must be avoided; two will be allowed—namely, brake and control.

17. Hoist operator must not be endangered by flying levers in emergency stopping of hoist.

18. No safety features must be dependent on the will of the operator.

19. Switch must be provided on operator's platform for an emergency stop, if necessary.

20. Travel limits and speed range must be adjustable.

21. Current input and acceleration of hoist motor must be governed automatically.

22. Hoist must start from rest gradually without excessive jerks and come to rest smoothly, and must be under control of the operator at all times.

23. The speed of the hoist must be varied by cutting the resistance into or out of the rotor circuit. The rheostat must be of the liquid type and of ample capacity to meet all operative conditions.

All the foregoing features were met in every particular, and it will be found that this type of control for slip-ring induction motor hoists has been made standard by the larger hoist manufacturers.

This hoist was placed in operation on Apr. 16, 1915, and to date has operated with no delays and very little upkeep. During 2½ years, the only repairs necessary to keep the hoist in operation have been a few contact tips for the reversing switches, and packing for the brakes and rheostat pump. The average power used for hoisting a car of coal 266 ft., including line and transformer losses, is 2.59 kw.-hr., which at 8 mills per kilowatt-hour amounts to $0.0207 per car, the average weight of coal in the car being 8960 pounds.

In connection with the electrification of the hoist, it was decided to electrify both inside and outside the mines. The electric haulage system was already installed inside, but the fans, pumps and air compressor were steam driven. The fan, which was situated on Sharpe Mountain, was about 100,000 cu.ft. per min. capacity, being driven by an 18 x 36-in. slide-valve engine.

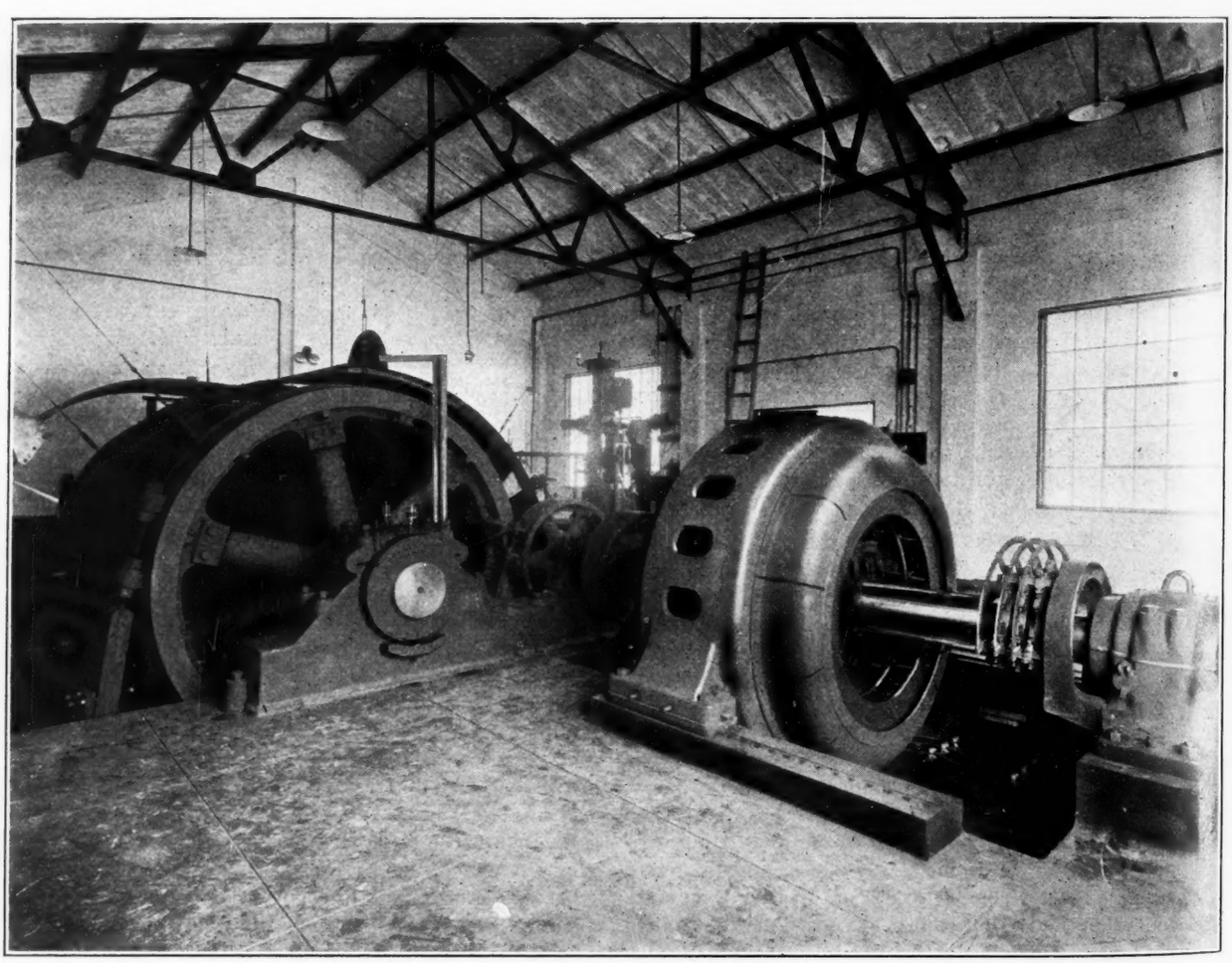


FIG. 2. ELECTRIC SLIP-RING INDUCTION HOIST, NO. 11 SHAFT, RAHN COLLIERY

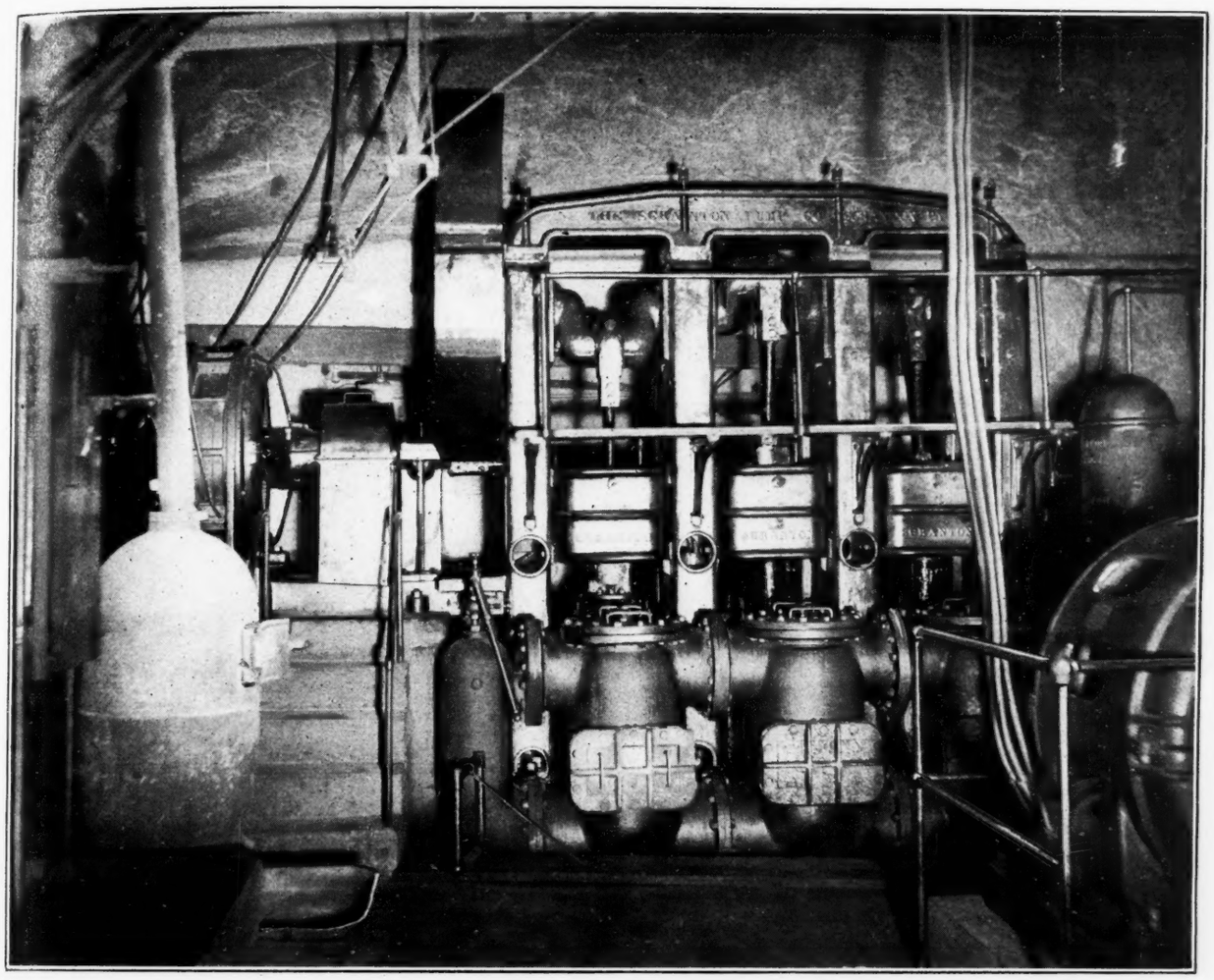


FIG. 3. TRIPLEX PUMP, NO. 11 SHAFT, RAHN COLLIERY

The hoisting engine and air compressor were situated near the fan and close to the boiler plant. The development of the new No. 11 shaft allowed the abandonment of the 30 x 60-in. hoisting engine, as the new electric hoist would operate from the same level as the steam hoist. In place of the 900 cu.ft. per min. steam-driven air compressor, we erected one of 1500 cu.ft. per min., electrically driven by a 250-hp. synchronous motor. A 200,000 cu.ft. per min. fan, driven by a 150-hp. slip-ring induction motor, was installed to take the place of the steam fan, and a small steam plant was built for heating.

The steam pumps were located in a pumphouse south of the bottom of the old No. 11 shaft. As this shaft was to be abandoned, it might be interesting to explain the various features of the electric pump installation in the mines. No detailed figures are available on the steam costs of operating the mine pumps, as at that time separate costs for the different units taking steam from the central boiler plant were not kept. The old pumping plant consisted of one 42 x 20 x 72-in. duplex pump, and two 16 x 48-in. single pumps. At various times, in flood seasons, it was necessary to install water tanks in the coal shaft either to prevent drown-outs or hoist the water from the mine in case of a drown-out.

The sump for the old pumphouse was situated about 50 ft. south of the old shaft, so it was decided to drive a small sump tunnel from the old sump into the shaft sump. The old sump was also extended westward about 300 ft., making the opening into the sump on a pitch, so that a car could be run into the main sump for cleaning purposes. One 1500-gal. per min. triplex, one 1500-gal. and two 3000-gal. all-bronze centrifugal pumps were ordered for this pumphouse. The triplex and the 1500-gal. centrifugal pumps were placed south of the shaft, and the two 3000-gal. centrifugal pumps were placed north of the shaft. The tail pipes of the 1500-gal. and the two 3000-gal. centrifugal pumps were run into the shaft sump, while the tail pipe of the triplex pump was run into the main sump. A ditch of large capacity was made on the west side of the pumphouse, entering into the main sump. Gates were installed to allow the water to be diverted into the shaft sump, if necessary, and a gate was installed in the sump tunnel, which dammed off the main sump from the shaft sump. By this method, it is always possible to clean either sump, and it is not necessary to wait for a dry season, with the added expense of installing dams for this necessary cleaning.

All of the centrifugal pumps are horizontally split, being all bronze, with a full-load speed of 725 r.p.m. The reason for specifying this low speed was that the mine water is acidulous and gritty. All pumps are hydraulically balanced, none of them depending upon thrust bearings.

A very important thing to consider in the specification for a centrifugal pump is to have a proper metal for acidulous water. The specification for the bronze in these pumps was 75 per cent. copper, 15 per cent. lead and 10 per cent. tin. All screws, washers and dowel pins should be eliminated from the seal rings and diffusion vanes. In fact it is believed better to buy pumps without diffusion vanes, as this part of the pump is very apt to give trouble. I do not approve of labyrinth rings for mine pumps. The seal rings should be wide, straight rings, the one on the impeller being shrunk on, the stationary ring being held from turning by means of a tongue resting on the bottom split of the casing.

pumps, and steam heat, the cost of the boiler plant for the year April, 1914, to April, 1915, was $46,992. This figure included the cost of fuel and handling, wages of firemen and ashmen, maintenance of boilers and pumping of water for the boilers. During the same time the shaft produced 343,665 tons of coal, or a steam cost of $0.137 per ton.

For the year November, 1916, to November, 1917, the electric power cost was as follows:

Hoist	$3,300.16
Fan	3,270.63
Air compressor	8,845.39
Pumps	6,174.08
Total	$21,590.26

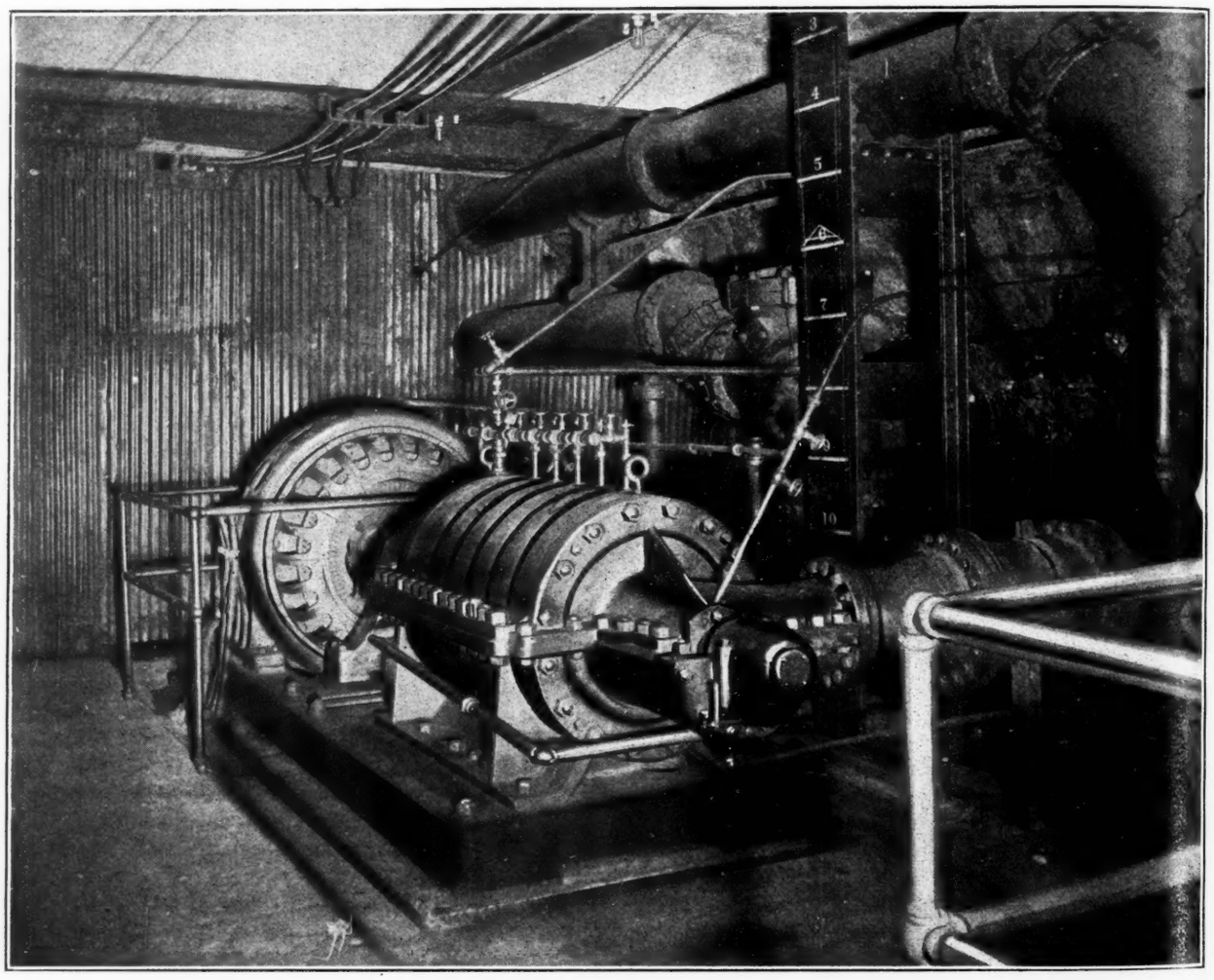


FIG. 4. CENTRIFUGAL PUMP, 3000 GAL. PER MIN., NO. 11 SHAFT, RAHN COLLIERY

It is a question whether the hydraulically balanced pump will operate under all acid conditions. However, the 8-in. six-stage pumps operating in No. 11 shaft have not given any trouble in this respect since they were placed in operation. The cost for operating these pumps, including transmission line and transformer losses, on a 266-ft. lift, is 1.545 kw.-hr. per 1000 gal., which, at a rate of 8 mills per kw.-hr., amounts to $0.012 per 1000 gallons.

When operating the old boiler plant at No. 11, which furnished steam for the No. 11 shaft hoisting engine, one steam fan, one 900 cu.ft. air compressor, the inside

To this figure should be added the cost of the heating plant, making a total power cost of $30,290.26. During this period the shaft produced 435,073 tons, with a power cost of $0.0696 per ton.

It can therefore be seen that this shows an actual saving per annum of $16,702, but as the use of electricity permitted more efficient work and less loss of time from repairs, drown-outs, etc., the tonnage hoisted increased from 343,665 to 435,073, and the cost of power per ton produced decreased from $0.137 to $0.0696, a saving of $0.0674 per ton, which for the output of 435,073 tons amounts to $29,149 per annum.

Some Data on Sperm Oils Used for Burning in Miners' Safety Lamps*

By A. G. BLAKELEY and E. A. REILLY
Philadelphia & Reading Coal and Iron Co., Pottsville, Penn.

THE representative of a big oil company was once asked if he could supply 10c. oil. "Certainly," was the reply. "I can give you oil for any price you may name—oil is simply a question of mixture." If oil can be mixed as to price, why cannot it be sold on specification? And why should it not be quoted to meet certain requirements? To the "lay reader," the tables accompanying this article may not mean much at first glance. However, the comments on them by those explaining the tests are interesting and to the point. They show by the results of these tests just which oils are satisfactory and where others fall short. The data given should prove valuable for reference—for comparison with reports which are made on oils from time to time.

This matter calls attention anew to the advisability of having specifications to cover the principal supplies purchased by coal-mining companies. For a number of years steel and cement have been purchased on specification and, to some extent, coal. The Federal Government has set the pace in this respect for coal for several years. If a small company does not care to incur the expense of the refinement of exhaustive tests on materials, it can in many cases apply a few simple tests which will answer all practical requirements. This is actually being done with some materials. Different kinds of reports are made by experts to suit the demands and purse of their clients.—EDITOR.

A CONSIDERABLE quantity of sperm oil is used as a burning oil in miner's safety lamps of the Davy type. Some trouble experienced with a shipment of supposedly pure sperm oil led the writers to conduct an investigation, the results of which are given in Table I.

The flake test indicates the temperature at which occurs a separation of solid matter. This test corresponds to the "cold test" of the sperm oil manufacturer. The cloud test indicates the temperature at which the lower half of the sample becomes opaque. The pour test indicates the temperature at which a sample of oil in cylindrical form of specified diameter and length will just flow under specified conditions.[1]

TABLE I. RESULTS

Abbreviations: N W, Natural Winter; B W, Bleached Winter; E W B, Extra Winter Bleached

Description of Sample														
Sample No.	R-1	R-2	R-3	F-1	F-2	F-3	N-1	N-2	N-3	N-4	S-1	F-4	T-1	T-2
Kind of Oil	N W	B W	B W	N W	B W	B W	N W	B W	B W	B W[1]	E W B	(*a*)	(*b*)	(*b*)
"Cold Test"	45	45	38	45	45	38	Below 38		42	42	....	....	....	....
Specific Gravity at 15.6° C.	0.882	0.876	0.877	0.881	0.879	0.879	0.883	0.881	0.882	0.879	0.883	0.879	0.884	0.881
Refractive Index at 15.6° C.	1.4649	1.4649	1.4649	1.4665	1.4661	1.4665	1.4649	1.4650	1.4650	1.4664	1.4669	1.4665	1.4593	1.4600
Flash Point, ° C.	245	260	260	245	255	250	260	255	265	255	265	250	250	270
Fire Point, ° C.	285	295	300	285	295	290	290	295	295	295	300	295	285	300
Saponification Value	142.1	128.9	130.2	136.1	130.1	130.6	142.2	135.0	139.6	127.7	133.8	130.8	145.7	142.7
Iodine Value (*Hanus*)	86.6	86.4	89.6	83.1	86.3	85.7	89.3	87.9	87.1	88.1	85.3	85.6	64.7	62.4
Per cent. Free Acid (calculated as oleic)	3.60	0.21	0.20	2.28	0.46	0.14	1.34	0.03	0.58	0.04	0.19	0.23	1.42	1.37
Flake Test, ° F.	52	51	42	50	43	39	39	38	38	37	43	....	....	....
Cloud Test, ° F.	46	46	35	45	39	34	36	34	35	34	38	....	....	....
Pour Test, ° F.	35	30	25	36	31	25	31	29	30	24	38	29	37	37
Viscosity (*Tagliabue*): at 70° F.	110	107	105	112	108	105	109	106	112	116	114	....	111	....
at 212° F.	91	93	94	93	90	88	93	97	93	92	96	....	86	....
Viscosity (*Saybolt*): at 100° F.	117	110	111	117	110	111	127	118	120	119	118	....	....	....
at 130° F.	82	82	83	79	76	76	80	74	80	74	88	....	....	....
at 210° F.	52	48	48	49	50	48	47	47	49	47	46	....	....	....
Percentages: Fatty anhydrides	63.1	59.8	59.6	55.5	61.3	56.3	63.0	52.4	64.1	58.0	....	63.7	60.1	59.9
Alcohols	35.2	39.1	39.9	43.3	37.1	43.2	35.4	46.2	33.6	41.4	33.6	35.2	36.3	37.8
Fatty Acids:														
Specific Gravity at 15.6° C.	0.899	0.896	0.897	0.897	0.895	0.894	0.896	0.899	0.896	0.894	0.895	0.893	0.895	0.895
Refractive Index at 15.6° C.	1.4623	1.4609	1.4600	1.4595	1.4595	1.4595	1.4587	1.4600	1.4585	1.4580	1.4609	....	....	....
Neutralization Value	216.2	208.9	206.2	201.6	201.2	194.3	204.3	198.8	201.3	188.6	197.7	186.8	224.8	222.8
Iodine Value (*Hanus*)	88.8	82.2	86.5	86.6	87.7	88.1	86.0	85.6	84.8	85.9	91.8	86.7	64.9	66.2
Titer Test, ° C.	13.6	11.5	10.5	12.9	10.6	10.1	7.9	7.7	9.6	6.2	13.2	11.0	12.0	12.0
Alcohols:														
Refractive Index at 60° C.	1.4475	1.4450	1.4455	1.4495	1.4490	1.4490	1.4461	1.4484	1.4465	1.4464	1.4388	....	....	....
Iodine Value (*Hanus*)	67.4	65.9	70.2	68.9	72.3	73.2	71.4	74.1	74.1	72.5	71.6	63.9	41.4	39.3
Melting Point, ° C.	27.0	25.5	25.0	23.5	24.0	22.5	24.0	20.0	23.5	25.0	23.2	24.0	34.0	35.0
Saponification Value of Acetate	193.2	216.0	203.3	202.9	193.4	200.1	204.6	197.9	197.3	215.4	189.6	189.5	198.3	

[1] Low acidity. (*a*) Sample representing shipment. (*b*) Oil which gave trouble.

The iodine values were determined by the Hanus method. The melting points were determined by the ordinary capillary tube method. No glycerol was found in any sperm oil tested.

Samples R1, R2 and R3 (received Dec. 1, 1916) were supplied by the same manufacturer. The manufacturer stated that the oil was probably taken from one or two different lots of Atlantic Ocean sperm oil. The oil was all from the sperm or cachalot whale. The head and body oils were thoroughly mixed. The "boats catch this oil in moderately warm waters, say from about as far north as the Azores to as far south as the coast of Brazil." Samples R2 and R3 were entirely satisfactory as burning oils. Sample R1, the natural winter oil, was not satisfactory for burning.

Samples F1, F2 and F3 (received Dec. 11, 1916) were all supplied by a second manufacturer. The oils were from the sperm or cachalot whale, and were mixtures of head and body oils. No further information was available. Samples F2 and F3 were entirely satisfactory as burning oils. Even sample F1, the natural winter oil (containing 2.28 per cent. free oleic acid) gave fairly good results, although showing a slight tendency to incrust the wick.

Samples N1, N2, N3 and N4 (received Jan. 4, 1917) were supplied by a third manufacturer. The manufacturer stated that the oils were all from the same cargo. The oil is bought from the whalers in original casks which, in refining, is put into a press, and in one pressing there may be three or four different casks of oil. These casks may contain head and body

*Reprinted from the Journal of Industrial and Engineering Chemistry, Vol. 9, No. 12, page 1099, December, 1917.

[1] Proceedings of the A. S. T. M., 15 (1915), Part 1, pp. 281-282.

oil from two or three different whales. The cargo from which the four samples were prepared consisted of some 16,000 gal. of oil of "very fine quality." The oil is all strictly pure sperm oil from the sperm or cachalot whale. Sample N1 represents the natural winter oil. Sample N2 represents the same oil after "caustic" bleaching to reduce free acid. Sample N3 represents sample N1 bleached by filtering through fuller's earth to make it of light color. Sample N4 represents sample N3 "caustic" bleached; that is, this sample had been treated both to reduce color and to reduce acidity. Samples N3 and N4 gave entirely satisfactory results in burning. Sample N2 was satisfactory but inferior to samples N3 and N4. Sample N1, the natural winter oil, was fairly good as a burning oil.

Sample S1 represents an oil submitted by a fourth company. No information was furnished with this oil. It gave satisfactory results as a burning oil.

Sample F4 represents an oil shipment which was entirely satisfactory. Samples T1 and T2 are from two different barrels of the shipment which caused considerable trouble. These oils encrusted the wicks very badly and were altogether unsatisfactory.

The nature of the adulteration in the unsatisfactory oils has not been determined. The table shows abnormal figures for refractive index (saponification value) and iodine value of the oil as well as for iodine values of fatty acids and alcohols, and for melting point of alcohols.

Results for the constants of the genuine sperm oils agree, in the main, with results given in the literature. For some constants, the writers have found a somewhat wider variation than is generally noted in the technical literature (see Table II).

In connection with the writing of specifications for sperm oil it has been the general custom to include requirements as to the maximum percentage of free acid allowed. In order to determine the effects of free acid upon the burning properties of sperm oil, experiments

TABLE II. CONSTANTS OF GENUINE SPERM OIL

	Data Given in Literature	Data From Authors' Tests
Sperm Oils:		
Refractive index (15.6° C.)	1.4664 to 1.4673	1.4649 to 1.4669
Fatty Acids:		
Specific gravity (15.6° C.)	0.899	0.893 to 0.899
Neutralization value	183 to 199	186.8 to 216.2
Titer test, ° C	11.1 to 11.9	6.2 to 13.6
Alcohols:		
Iodine value	64.6 to 65.8	63.9 to 74.1
Melting Point, ° C	25.5 to 27.5	20.0 to 27.0
Saponification value of acetate	161 to 190	189.5 to 216.0

were made with sperm oil to which had been added varying amounts of pure oleic acid. The oil was in each test burned in a Davy miners' safety lamp. It was found that sperm oil containing 1, 2, 3 and up to 4 per cent. added oleic acid caused a slight crust to form on the wick, but that oil with even 4 per cent. oleic acid gave fairly satisfactory results. The addition of 5 per cent. oleic acid caused heavier crust, while the addition of 6 per cent. made the sperm oil entirely unsatisfactory for burning in a Davy safety lamp.

In judging the suitability of a sperm oil for burning purposes, one would do well to consider the iodine value and refractive index as well as the other constants and the free acid.

Some of the work above tabulated was done by Mr. Donald Thorn, to whom the authors would acknowledge indebtedness.

Coal Mining in Alberta During 1917

By J. T. Stirling
Chief Inspector of Mines, Edmonton, Alta., Canada

During the year 1917 there were in operation in Alberta 283 coal mines, one copper ore mine and two shale mines. Of these 48 were opened, 11 reopened and 38 abandoned. The output of coal for the year was 4,863,414 tons, exceeding that of the year 1916 by 214,810 tons, notwithstanding that the production was considerably interfered with owing to labor troubles and lack of railway facilities in certain districts.

If the mines had worked steadily throughout the year with the present labor employed and the present amount of development, the amount of coal produced would have been nearly 8,000,000 tons or over 3,000,000 tons in excess of what was actually produced.

The importance of this will be understood when it is remembered that over 3,000,000 tons of imported coal were consumed in the Provinces of Manitoba, Saskatchewan and Alberta, a territory which could be more than supplied entirely by Alberta mines.

Notwithstanding these facts it may well be asked why it should be necessary to import into Western Canada, at the present time over 3,000,000 tons per year from the United States, particularly at a time when the operation of munition plants and other essential industries in the United States and Eastern Canada are being seriously interfered with owing to lack of fuel. And the thing that strikes one who has tried to familiarize himself with the situation is the absurdity that such a condition should be allowed to exist. More than sufficient fuel can be produced from the Alberta mines to supply all the demands existing or likely to exist in the Provinces of Manitoba, Saskatchewan and Alberta, and in addition that part of the United States immediately to the south of us. It is being fully demonstrated every day that railway locomotives, steam plants and buildings of all kinds and sizes can use Alberta coal in Saskatchewan and Alberta with very satisfactory results, so that there appears to be no reason why the same fuel cannot be used in Manitoba.

The statement has been made on various occasions that Alberta coal will not store, and while this may be true to a certain extent regarding 25 or 30 per cent. of the output produced, it is not true of the remainder.

Satisfactory progress is still being made in connection with training in mine-rescue and first-aid work, three mine-rescue cars and six stations being now in operation. Whenever possible these cars and stations are placed under the charge of returned soldiers who have previously been engaged in mining, the result obtained by these appointments being very satisfactory.

The average number of persons employed in or about coal mines during the year was 2263 above ground and 6047 below ground. The total number of persons employed above and below ground on Dec. 31, 1917, was 9812. This shows an increase of 1213 over the number employed in December, 1916.

Safety lamps of the Wolf type, which have been in use in practically all the mines where safety lamps are required, are gradually being replaced by electric cap lamps of the Edison type.

A number of mine operators, particularly in the Crow's Nest Pass, have erected inert dust barriers. These barriers extend from 175 to 200 ft. in length and consist of shelves 18 to 24 in. wide and 24 in. apart. There is no doubt that these barriers would have the effect of minimizing the effects of an explosion should one occur.

The coal-mining industry in the Province is assuming large proportions, and if all fuel consumed in the Provinces of Alberta, Saskatchewan and Manitoba was supplied from Alberta mines as it should be, the output would be nearly doubled. It is confidently expected that this condition of affairs will obtain in the near future.

The following table gives particulars respecting the amount of coal actually produced in each district in Alberta during the year 1917, and also the amount which could have been produced in each of these districts if the mines had been in operation fairly steadily without increasing the present amount of development or the number of men employed.

OUTPUT OBTAINED AND POSSIBLE OUTPUT OF MINING DISTRICTS IN ALBERTA, CAN., DURING 1917

District	Output Obtained, Tons	Possible Output, Tons
Crow's Nest Pass	1,193,313	1,779,888
Pincher Creek	6,804	12,891
Lethbridge	619,850	903,391
Magrath	1,011	2,244
Milk River	9,140	19,200
Taber	175,666	277,920
Bow Island	6,846	14,124
Medicine Hat	14,846	36,780
Aldersyde	7,339	14,712
High River	1,096	3,192
Drumheller	660,974	1,187,052
Big Valley	29,897	57,971
Brooks	8,283	23,256
Hanna	26,064	60,492
Lacombe	18,223	42,624
Trochu	14,134	37,284
Three Hills	24,874	47,172
Carbon	4,615	7,776
Battle River	10,544	34,748
Camrose	61,293	118,992
Tofield	71,510	150,972
Clover Bar	263,857	475,308
Edmonton	120,519	222,732
Mannao	19,406	43,116
Cardiff	257,459	532,812
Wabamun	19,007	31,308
Pembina	84,249	168,480
Canmore	196,233	286,008
Brazeau	266,897	397,596
Jasper Park	250,079	355,416
Yellowhead Pass	146,949	196,032
Mountain Park	153,397	202,068
Banff	118,717	162,468
Total	4,863,414	7,904,825

Nature and Distribution of Peat Deposits

Peat is a dark-brown or black residuum produced by the partial decomposition of mosses, sedges and other vegetable matter in marshes and like wet places. Most of the peat deposits of this country occur in depressions and poorly drained areas in regions where the temperature of the air and the soil is low in summer and the humidity of the air is high. The most extensive peat beds are found in New England and around the Great Lakes, where the climate and the topography are favorable to the accumulation of partly decomposed vegetable matter. Many deposits are found also in the Atlantic Coastal Plain, from New Jersey southward to Florida. In regions of heavy downfall along the Pacific Coast peat bogs occur wherever the drainage is so greatly interrupted that the soil becomes permanently saturated with water.

The Second Annual Report of the Public Utilities Commission of Maine contains descriptions of many peat bogs in that state. Detailed information relating to the occurrence of this material in Maine and a map showing the location of workable deposits in that state can also be found in United States Geological Survey Bulletin 376, which, though no longer available for free distribution, may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 20c. a copy.

It is estimated that more than 11,000 square miles of swamp land in the United States contains peat beds of good quality, and that the total available fuel in these deposits would amount to more than 12,000,000,000 tons, a quantity that, if it could be distributed, would furnish heat and power for the entire country for many years. Much of this material is in states that have no known deposits of coal and that on account of their cold climate and their manufacturing industries consume large quantities of fuel, a constantly increasing percentage of which has to be brought by rail and water from distant mines. According to a recent estimate made by Prof. E. K. Soper in a paper on the peat deposits of Minnesota, published by the Minnesota Geological Survey, more than 6,000,000,000 tons of air-dried peat fuel can be obtained from deposits in that state alone. The utilization of these deposits would augment the local fuel supply and incidentally would relieve the strain on our transportation facilities by furnishing fuel to an area where coal is now brought by the longest haul.

Coal and Coke Production in Canada During 1917

The preliminary report of the coal production of Canada during 1917 by the Canadian Department of Mines shows a total production of 14,015,588 short tons of coal valued at $47,643,646, as compared with 14,483,395 tons of the value of $38,817,481 in 1916. The provinces of New Brunswick, Saskatchewan, Alberta and the Yukon showed a total increase of 281,781 tons. The total decrease in Nova Scotia and British Columbia was 752,588 tons. The Nova Scotia production fell off 587,456 tons or 8.5 per cent. as compared with 1916. Alberta increased 164,085 tons, notwithstanding the serious loss in output due to strikes while British Columbia production fell off 165,132 tons.

The total imports in 1917 included 15,537,262 tons of bituminous coal, valued at $42,452,771, as against 13,009,788 tons valued at $17,073,303 in 1916, and 5,320,198 tons of anthracite valued at $28,109,586, as against 4,570,815 tons, valued at $22,216,363 in 1916.

The total output of oven coke in 1917 was 1,231,865 tons, made from 1,978,893 tons of coal, of which 1,379,038 was of domestic origin. In 1916 the total output was 1,448,782 tons. Nova Scotia showed a decrease of 8767 tons; Ontario, 77,488 tons; Alberta, 11,352 tons and British Columbia, 119,310 tons. At the close of the year 1657 ovens were in operation and 875 were idle. Imports of coke were 970,106 tons, valued at $6,517,260, as against 757,116 tons, valued at $3,229,078 in 1916. Of the total output of coke 914,466 tons was made in by-product recovery ovens and the recovery of byproducts included ammonium sulphate, 9941 tons, and tar, 8,277,078 gal., as against 11,040 tons of sulphate of ammonia and 9,012,202 gal. of tar in 1916. There was also an important recovery of benzol, toluol, naphtha and naphthalene.

Cement Gun in Mining Work—II*

By GEORGE S. RICE
Chief mining engineer, Bureau of Mines, Pittsburgh, Penn.

SYNOPSIS—*A review of the use of the cement gun in the Leonard mine at Butte, Mont., in the mines of the Philadelphia & Reading Coal and Iron Co., the Consolidation Coal Co. and the H. C. Frick Coke Co. Some figures on the cost of cement-gun work.*

FOLLOWING the first tests made in 1914 of cement coating with the gun at the experimental mine, I and my able assistant, the late L. M. Jones, began a campaign among mine operators to urge the trial of the method in mining operations. We advocated the application of a coating to the roof and sides to prevent weathering and also to render ventilating and fire stoppings air-tight. In regard to the latter, it frequently happens that while the stopping itself is tight the ground surrounding it is permeable. Often the air passes freely through the coal strata around the end of the stopping. This is largely prevented by the use of a closely adhering cement coating such as can be put on by the cement gun, not only adjacent to the stopping but for a number of feet back along the sides of the opening.

The matter progressed rather slowly for a time, but within the past year much testing has been done, and I have brief statements from a number of concerns which show the present widespread application. Among other things the cement gun has been used for fireproofing shafts which had wood linings, wire mesh being placed over the wood, such fireproofing or other alternative being required in Illinois.

In the fall of 1916, the writer, in visiting the Leonard mine of the Anaconda group at Butte, Mont., was struck with the difficulty in keeping the extensive fire areas sealed off. These fires were fed by timber and rich sulphide ores. I suggested to the superintendent who accompanied me the important advantages that might accrue from the use of the cement gun for the repeated coating of the stoppings. These had to be renewed from time to time because the heat would crack them. I suggested also that the cement gun could be used to advantage to seal the cracks in the adjacent broken ground. The patching work had been done by hand and was very laborious and difficult on account of the heat. The cement-gun method was tried and found to be of such an advantage that now nine guns have been purchased by the Anaconda company and, according to an article in the *Mining and Scientific Press* of July, 1917, the work is accomplished in one-fifth of the time required by hand work. The article states:

> The finished work shows that the mixture of sand and cement has been shot into every crack and fold of the rock until it can hardly be distinguished from the rock itself. In some instances, on account of fumes, it was necessary for the nozzle-man to wear a compressed-air hood . . .
>
> In preparing the ground for these bulkheads, no other work than picking out the loose rock on the bottom, sides, and back was done. The loose rock in the bottom extended from 16 to 24 in. below the track level.
>
> In some cases there were large loose boulders in the back which it was not feasible to remove. They were held in place by stulls, and cement was shot in the crevices between them. When this had set, the stulls were removed and the bulkheads built from the floor up to meet them.
>
> In some cases, after the completion of these emergency-bulkheads, cement was shot on the entire back and sides of the drift on either side of the bulkhead for a distance of 16 to 18 ft. in length. This sealed all seams that were likely to bypass fumes around the bulkhead. Heavy blows will not cause this coating to sliver off nor to show any line of cleavage. The only result is a powdering of the cement directly under the hammer-head. Immediately above the passageway in these bulkheads, pipes were cemented in to allow of passing air, water, and electric-wire through the bulkhead.

It is learned, through the courtesy of W. J. Richards, president, and Charles Enzian, mining engineer, that the Philadelphia & Reading Coal and Iron Co. now has eight guns distributed through the mines of that company. It is stated that

> The use of the machines so far has been confined to lining tunnels, pointing and facing retaining walls and gob stoppings, lining reservoirs, etc. We hope to try fireproofing shafts, etc., as labor becomes available for such work.

Douglas Bunting, chief engineer of the Lehigh & Wilkes-Barre Coal Co., states that his company has used the gun for lining a gangway driven in top fireclay, also for coating a short tunnel in fireclay rock and for covering the underside of Hy-Rib used in connection with steel timbering. As yet, the experience has been too recent to determine how serviceable the gunite will be.

John G. Smyth, chief engineer of the Consolidation Coal Co., says that his company has used the cement gun in coating headings at its mine No. 155, Van Lear, Ky., and at mine No. 125 at Somerset, Penn. In the latter mine there was a rock slope driven across the measures. It was first expected to use massive concrete arching to line these slopes, but later it was thought that if the action of the atmosphere could be kept away from the strata it might stand. In the main slope 675 lin.ft. were gunited, and in the manway slope, 300 lin.ft. Similar treatment was given to 1786 lin.ft. of air course driven through the coal bed, where 12 to 30 in. of slate of uncertain character were taken down. This work was begun in May, 1917, and continued at intervals to September, 1917.

Mr. Smyth states:

> From our experience with gunite underground the serious question is the action of the gunite under atmospheric changes during winter and summer, and of course the job in question has not been in place long enough to pass any judgment on this feature. It may be found necessary to use a reinforcing wire mesh in the gunite to take care of the expansion and contraction. On account of the irregular nature of the side walls and roof the application of reinforcing will be tedious and the increase in labor cost will be quite an item.
>
> The work in question was done in a very thorough, workmanlike manner. The conditions were such that we feel that this job will settle the question in our minds as to the permanency and value of gunite in underground work, particularly to protect the roof and side walls from disintegration.

The Consolidation Coal Co.'s first work of this character was done in November, 1916, in the coating of

*Paper read before the Coal Mining Institute of America at its Pittsburgh, Penn., meeting, Dec. 6, 1917, and entitled "Weatherproofing Mine Roof and Walls and Making Tight Stoppings With Cement Gun."

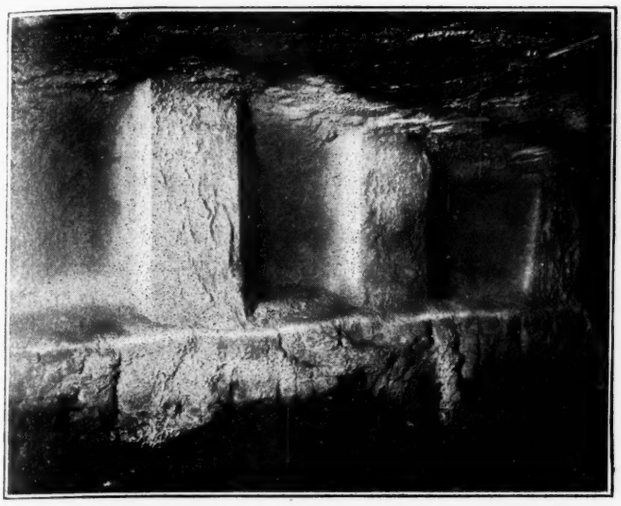


FIG. 5. DRAWSLATE AND TILE BLOCK GUNITED

The drawslate in the United States Experimental Mine had weathered back over the coal. To support the roof tile blocks were erected on the top of the coal and the blocks and drawslate gunited as shown so as to prevent further deterioration of the drawslate.

FIG. 6. RAIL BEAMS COVERED BY GUNITE

In this section of the United States Experimental Mine a heavy fall took place before the roof was gunited. Rail beams were put in to carry the burden, roof and beams being covered with gunite for protection against further weathering. In the rear is a massive concrete stopping.

the roof and ribs of mine No. 155 at Van Lear, Ky. It is stated by Mr. Collier of the Cement Gun Co. "that the thin coating put on stood through the first year, then dropped off in patches, but the roof had not come down, while in the parallel entry without treatment the roof had slacked off to the amount of many carloads." He added that though some repairing of the patches in the cemented entry would need to be done, this would cost less by far than what was needed to repair the other entry.

The Clearfield Bituminous Coal Corporation, according to J. William Welter, chief engineer, purchased a cement gun, but have only just begun to use it. It is interesting to state the condition; namely, that the purpose was to place a coating on the exposed surface of a fire-clay roof. Mr. Welter writes:

> As is characteristic of fire clay, this material slacks when the air comes in contact with it. . . . It was necessary for us to make considerable preparation, such as removing all loose particles from the roof . . .

The Rock Island Coal Mining Co. employed a cement gun in their No. 10 mine, Hartshorne, Okla. It is understood that 350 lin.ft. of entry was covered as an experiment, and that it has withstood the heavy slacking of the past summer.

As an offset to some of the promising results, one of the earlier tests, which followed the testing at the experimental mine, has recently been reported as unfavorable, although at first it looked as if it would be a success. This test was made by the H. C. Frick Coke Co. in 1914. The then chief engineer, J. P. K. Miller, wrote the author on Jan. 15, 1915, as follows:

> The cement gun has been used at two points near the shaft bottom and the superintendent is well pleased with the character of the work it is doing, which consists of coating the roof, after it has been properly treated. The work is being done with a view of preventing any further falling of roof. We intended at one time to arch the roof, but hope that now it will not be necessary.

Thomas W. Dawson, writing Dec. 1, 1917, says:

> The results [of the cement gun] were not satisfactory, but, in our opinion, this was due to the fact that in a number of places the covering of the cement applied was very thin; the whole covering being of variable thickness.

Mr. Dawson quotes from a report from Mr. S. Mack, the mine superintendent, that:

> For about two years it [the gunite] looked as if it was going to be very satisfactory. Shortly after that it began to crack off in small pieces, and I find that there are a number of places where it has spalled off where before it looked solid. It seems that the spalling starts where the cement is thin and then extends to the thicker parts.
>
> Of course this work is all experimental but I believe that if all the roof that is loose is taken down and the space thoroughly washed and a coat not less than ¾-in. thick applied it will last for quite a long time but it must be done right.

Mr. Dawson reported that the mine foreman advised that:

> After an interval of about one year it began to show signs of failure by some cracks appearing. He did not know whether these cracks were due to movement in the roof or sides or due to the slacking of the rock and coal, but when this covering was tested it sounded hollow, showing that the bond between the cement and the rock and coal had been broken so that it would seem that the failure was due to the slacking of the rock and coal behind the cement covering.

In spite of this unfavorable evidence, I do not feel that this testimony should be regarded as condemning such a coating. I do not know fully the conditions of this particular test, for instance whether the ribs were also covered. If they were not then with the usual tendency of the coal of the Pittsburgh district to spall off and crack so that air is admitted, weathering might continue upward and over the cement coating. The test was a difficult one, as it is understood the entries were wide. One must also weigh the first cost plus the cost of annual repairs against the annual cost of timbering and cleaning up falls over a number of years.

Undoubtedly if a roof is of a nature that it can be "brushed" so that its cross-section will be in the form of an arch it will assist in making the coating self-supporting, and as a final resort a light wire mesh resting in a shallow groove in either rib at the springing line of the arch and a heavier coating about 2 in. thick could be employed. This would make the coating self-supporting and it would not then have to be held up by the roof to which it is caused to adhere. The rib coating does not need reinforcement, so the final

cost should not be great. In the long run it is believed that this additional cost would be justified, and certainly such work would be much cheaper than massive concrete lining or brick arching.

The Consolidation Coal Co. of Iowa, the Valley Camp Coal Co. of Pittsburgh, Penn., the Cambria Steel Co. of Johnstown, Penn., the Cameron Coal Co. of Marion, Ill., the New River Co. of MacDonald, W. Va., and many other companies, are all experimenting with the use of the gun in underground work. Therefore in the near future there will be available a large amount of information on the success or failure of weatherproofing roof by cement coating.

Cost of Cement-Sand Coating

The cost of applying the cement-sand coating varies widely with conditions. It has been rather difficult to get figures. Some of the companies do not care to disclose them and others have not kept them in precise shape. In the first work done at the experimental mine the figures were as follows:

For coating 378 ft. of entry averaging 5.9 ft. in height and 9.15 ft. wide, the cement averaging about 2 in. in thickness on the ribs and ½ in. thick on the roof, the costs were as follows:

Labor and Repairs:		
Labor	$138.86	
Supervision	23.04	
Cleaning and repairing gun	10.74	$172.64
Material:		
Cement 280 sacks, or 70 bbl., at $1.10 per bbl.	77.00	
Sand 42 tons at 89c. per ton	37.38	114.38
Total		$287.02

The cost per lineal foot of entry averaged 76c., and the cost per square yard of surface averaged 32c. This job took ten days and the speed was 4.7 lin.ft. per hour, or 11¼ sq.yd. per working hour. In a subsequent job the total cost per lineal foot of entry was 93c. and the average cost per square yard was 40c.

Tested by the explosions in the experimental mine the coating on the ribs remained intact, but the roof coating shelled off from time to time. It did not always separate from the shaly material of the roof, for the two occasionally came down together. In these places and in other parts of the mine we attempted to get a stronger job by drilling holes in the roof as keys for the cement. At the same time we put in reinforcing wires. Also where the roof was naturally very weak some rails were put in for support. The total cost of repairing 6600 sq.ft. of roof and sides, including the railing reinforcement, was $617.95, or 85c. per sq.yd. The cost of applying the gunite averaged alone 42c. per square yard.

In a certain Western mine the cost of the coating put on by the cement gun is given as follows: Labor, $21.50; and material, $17.80 for a total of 190 sq.yd., or 20.6c. per sq.yd. This cost is very low and the figures cover apparently only the application, the coating being ½ in. thick.

One of the companies in Pennsylvania reports that the actual cost was $3 per lineal foot of heading. The section of heading averaged 22 sq.ft., making the cost about 13.6c. per sq.ft., or $1.22 per sq.yd., of gunite deposited. This cost is based on cement at about $2.20 per bbl. and sand at $2 per ton at the site. The thickness was about 1 in., no reinforcement being used, but it was most carefully done and the estimate includes all costs.

At a mine in the Connellsville district, the cost of cementing 5929 sq.ft., which was accomplished in 12 days, the daily cost was as follows:

One demonstrator	$2.86
One nozzle man	2.85
One machine tender	2.15
Two laborers at $2.15	4.30
One-half time teamster at $2.00	1.00
Total	$13.16

The total labor cost was $154.02.

Material:	
325 sacks cement	$125.12
600 bu. sand	36.00
50 ft. mining machine hose	17.50
Total	$178.62
Grand total	$333.44

The cost per square foot was therefore 6.38c., or per square yard 57c. It will be observed that these figures vary widely, but it is thought that under average conditions, with men fully trained in the use of the cement gun, that work can be done for at least 50c. per sq.yd. on the basis of wages prevailing prior to 1917.

It may be pointed out that the gunite not only protects

FIG. 7. SHOWING THE EFFECT OF GUNITING

The coal face as shown on the left, like all natural faces, is provided with ledges on which coal dust can accumulate. On the extreme right is the gunited coal, without ledges, with the insulated wire covered and so protected from injury. Note also how the gunite aids to lighten the heading.

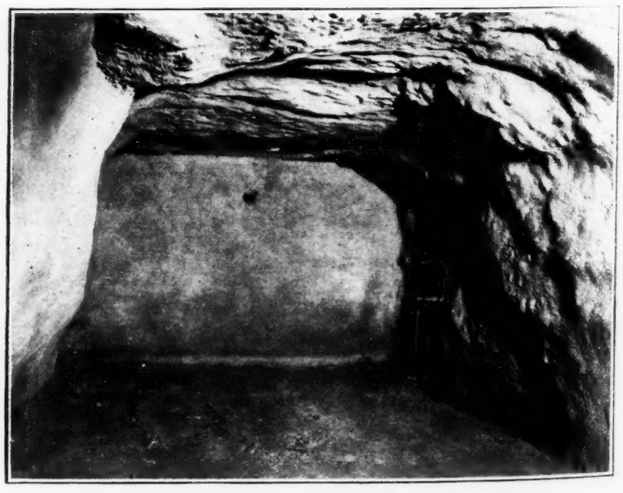


FIG. 8. GUNITE SURROUNDS THIS STOPPING

In this instance the roof and the floor near a massive concrete stopping has been carefully gunited. This prevents the air from leaking through the rib or the roof to the area beyond. In case of a mine fire this is a most valuable feature and assures a more rapid extinction of the conflagration.

the roof and sides from weathering, but also assists in the illumination of the passageways by reason of its light color. It also lessens the hazard of coal-dust explosions.

The ordinary timbered entry has innumerable projections and there are many recesses on the coal ribs which serve as places on which coal dust may collect in dangerous quantities. Comparatively little dust can collect on the surface of a cement-coated heading and what does collect can be readily washed down without damage to the roof or ribs.

The conclusions are:

1. By compressed air a cement-sand coating can be successfully applied to the weak roofs of entries and tunnels in coal mines.

2. By the use of the above means the ribs and a weak roof in coal mines promise to be satisfactorily weatherproofed.

3. Steel timbers in entries and shafts can be protected from rusting and wood timbers fireproofed.

4. The method is of the greatest advantage in fireproofing wood overcasts and stoppings and in making them air-tight. By facing gob stoppings with this material they can be made tight.

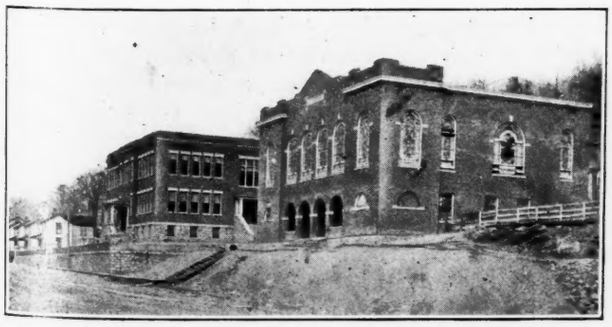
5. Fire stoppings can be made gas-tight and are quickly built and repaired.

The last four purposes alone justify the employment of the cement gun method, regardless of what machine is used with the accomplishment.

Eastern Kentucky Pioneer Towns

A few years ago the pioneer towns were no credit to the mining industry. The argument was that when you went into a country with "sagers" who had not had any domestic comforts except those of a log cabin inherited from three or four generations back—a cabin that was in the last stage of disrepair, the chimney of which smoked unconscionably—you could safely put up any kind of a crib and call it a tenant house and invite the people to occupy it.

But we do not do it that way today. No towns today are better than these pioneer communities. The operator is trying to get skilled mining labor from older camps; he is trying to get the better indigenous labor, and then also he has a pride in making the camp a village and not a mere shanty town. He looks for a longer life for the village than was customary years ago. Such towns as Jenkins, McRoberts, Burdine, Dunham, Seco, Fleming, Haymond and Hemphill in Kentucky show how far the new pioneers have advanced from the old idea that a pioneer town should closely resemble the town a squatter would build when he, in his forty-niner wagon, found a stream with pay gravel.



CHURCH AND SCHOOL BUILDINGS AT JENKINS, KY.

Most of the big operating companies in eastern Kentucky maintain playgrounds, rest and reading rooms,

AT JENKINS, KY., THE CONSOLIDATION COAL CO. HAS A SPLENDID HOSPITAL

newsstands, where many of the best newspapers and magazines are on sale, Y. M. C. A.'s, motion-picture shows, churches and, of course, good schools. It is said that during the first year of development work in Jenkins and the surrounding territory the company spent over $100,000 in Y. M. C. A. work alone, including the construction of a $40,000 building in Jenkins and branch buildings in McRoberts, Burdine and Dunham. The Elk Horn Coal Corporation has also spent large sums in maintaining this work in Fleming, Hemphill and Haymond.

Eastern Kentucky gardens are comparable with those anywhere. The mine workers are finding that gardening brings them in large returns. From the first the Consolidation has had 8 to 10 acres in gardens and a 500-acre dairy with adequate high-grade stock.

Miners May Join Army Engineers

Miners who are classified for active service in the coming draft are eligible for enlistment in the First Replacement Regiment of Engineers, which was organized at Washington Barracks, D. C., on Dec. 14, 1917, for the specific purpose of keeping all engineering units of the army at full enlistment strength during the period of this war. Engineers are called upon to perform such a wide range of work that practically every man with any technical training or mechanical ability can find a place in this organization. Every male citizen in the United States who is physically fit, and between the ages of 18 and 21, and 31 and 40, is eligible to join the regiment by voluntary enlistment.

To be assured of assignment to this regiment, the applicant for enlistment should write to the Commanding Officer, 1st Replacement Regiment Engineers, Room 107, Headquarters Building, Post of Washington Barracks, D. C., for application blank. If the blank shows the man to be eligible, an enlistment card is filled out and sent to the recruiting officer nearest to the applicant's place of residence, with instructions to enlist the man for service in this regiment. Transportation and meals will be furnished by the recruiting officer and the man will be instructed to report at the post for duty.

Mining Engineers Consider Industrial Relations—IV

By R. DAWSON HALL
Associate Editor, "Coal Age"

SYNOPSIS—*The members of the American Institute of Mining Engineers discuss the losses of industry due to frequent changes in personnel. Thomas T. Read urges that every large company should have an employment manager who should be regarded as a leading official in the corporation. Short account of banquet and trip to Princeton University.*

THE address on "The Employment Manager and the Reduction of Labor Turnover" by Thomas T. Read followed the paper by H. M. Wilson and the discussion on the relative hazards of untrained men and chance-takers. A few aphorisms and statements from this paper may be profitably quoted.

"Intensive study has shown that faulty methods of hiring and discharging men are the most important factor in labor turnover.

"Centralized hiring does not impair the authority of the foreman; he hires his men from the employment office and discharges them back to it, instead of from and to the street.

"The introduction of the employment manager, who is a direct representative of the employer, tends to restore the former relation of direct intercourse between employer and employee that was helpful in avoiding friction between them. Employment managers have invariably reduced labor turnover so that it is now, in some cases, as little as one-tenth of what it was formerly.

Physiognomy Not a Safe Guide for Selection

"Many people think they are good judges of character, whatever that may mean, but it has been scientifically demonstrated that the determined chin, thoughtful brow, sensitive mouth and so on of fiction writers has no basis whatever in fact, and in general that there is no connection between physical features and the characteristics and aptitudes of men. About the only thing that can be told about a man by looking at him is that if he weighs 110 lb. he would not be a good man to put at lifting heavy weights, and if he is 5 ft. 2 in. tall he would not be adapted to a job where he had to reach high.

"The employment manager should have either at his own command or among his associates all the languages spoken in the company's working force.

"The employment department of the Saxon Motor Co. is credited in the first year of its operation with reducing the labor turnover of that organization to 40 per cent. of what it had been. The Hayes Manufacturing Co., of Detroit, diminished its labor turnover one-half the first year and another one-half the second year, while the output per man increased 30 per cent. The Solvay Companies, of Detroit, reduced the labor turnover rate from 10 per cent. per month in May, 1916, to 2.4 per cent. per month in December. Fayette R. Plumb, Inc., of Philadelphia, reports that employment management reduced its labor turnover 48 per cent., enabling it to decrease its working force 10 per cent., to reduce the working time 9 per cent. and at the same time increase its total shop production 10 per cent. In such an organization as the Bethlehem Steel Co. labor turnover probably costs at least $3,000,000 a year.

"A man's rank in the organization inevitably depends largely on his salary. No one who works low in the organization can do effective work as an employment manager because he is not in position to make his views prevail. The failure of the first British campaign in Mesopotamia proved to be due, not to the inadequacy of the medical department but to the fact that the medical officers did not rank high enough to insist that the necessary preparations be made and precautions taken.

Experts Buy Supplies; Anyone Can Buy Labor

"An employment manager is that member of a modern industrial organization who is charged with the specific duty of hiring men for the whole organization. The recent growth of corporate industry has led to the hiring of men in such numbers that the work becomes a task of first-class magnitude: in some cases twenty to fifty thousand men are hired in a year. No organization would think of buying supplies on such a scale without creating a special department to see that it was done in the most efficient and economical manner, and it is remarkable that industry has waited so long before putting the purchasing of so complex a thing as labor on a scientific basis.

"I have said the purchasing of labor; it would be more accurate to say the selling of employment, for the demands of industry at the present time are such that the workman no longer has to go with his hat in his hand asking for a job: the representative of the employer has to go to the workman and endeavor to get him to accept employment. This is an additional and powerful reason why the employing of workmen for a given industrial organization should be put in the hands of one who can bring special skill and knowledge to bear on the work.

"Labor represents more than half the cost of the finished product and it is more essential that labor shall be bought (or employment sold) by a man having special knowledge, skill, and aptitude than it is to have a purchasing department for raw materials. There are many other specific reasons why centralized hiring is desirable and profitable. In the first place, if hiring is done by foremen and the workmen are chiefly foreigners, it frequently transpires that the foreman is grafting on the men he employs, especially if labor is plentiful. Decentralizing hiring also builds up racial or religious cliques in a department that will make themselves felt in trouble later. This is inevitable, since the only source of supply that a foreman has is through his friends and the friends of the men on his gang."

It may be added that the paper gives forms for the conduct of the office of employment manager—the requisition of the foreman asking for help, the application of the applicant for work, the medical examination card, the medical report, the hiring slip, the employee's attendance card, his transfer card from job to job and his leaving slip.

The afternoon session on employment problems was enlivened by a short talk from I. C. Henderschott, of the New York Edison Co., executive secretary of the National Association of Corporation Schools, who said that Frank A. Vanderlip, the president of the National City Bank of New York, stated that a billion dollars a year was lost in strikes, two billion dollars in the incapacity of working men and two to five billion dollars in labor turnover.

Lawrence Veiller, of the National Housing Association, declared that one company spent ⅛ of 1 per cent. of its payroll in improving its houses and found that it was amply repaid by the lessened loss from labor turnover.

In the absence of Maj. Frank M. Gilbreath, the authority on motion study and fatigue, his wife spoke for him—the first time a woman had spoken at a technical session of the institute, the results being wholly encouraging to an extension of the experiment. The subject was "The Crippled Soldier in Industry."

Mrs. Gilbreath urged employers to note and record all jobs around plants which could be filled by crippled men. Some one remarked that he felt as much urged now to search out jobs for crippled men as he had felt urged before to keep cripples out of his organization. Much of the selection of workmen in the past has resulted in the pauperization of those rejected. The war will make a lot of cripples, and it will be a crime if no place in industry can be found for these men.

Most Vital Need in Industry Is Brains

The paper of F. C. Stanford, of Ishpeming, Mich., was largely a review of the school work of the Cleveland Cliffs Iron Co. of which he is chief electrician, but some of his remarks are well worthy of reproduction for coal-mining engineers.

"The average of knowledge is not equal to the average needs of the present time, but continually fails to keep pace with it. It has been aptly said that the really essential need of the period is for more brains; if we only had sufficient knowledge and sagacity we could not only solve all difficulties, but prevent them from arising.

"This generalization holds good for an industrial organization. The most vital need of the management is for more brains. The logical course for an engineer in charge of an industrial organization is, therefore, to direct whatever forces may be at his command toward the development, training and guiding of all the brains in his organization.

"This is easier said than done, for it involves the carrying on toward two objectives, the maximum of productive work, and the development of the individuals who perform it. This is essentially like the rebuilding and enlarging of a plant, keeping it in full operation the while. On the other hand, if the aim is merely for maximum production from an organization, without offering opportunity for development, the final outcome will necessarily be like that of a plant that is driven at full capacity without stopping for repairs and improvements; it eventually becomes so run down that either a complete rebuilding or abandonment is necessary. If the best results are to be obtained in an industrial organization it is imperative to make provision for the development of the individuals composing it.

E. E. Bach's paper on "Social and Religious Organizations as Factors in the Labor Problem" defies any attempt to abstract it. It gives a somewhat complete account of the work at the Ellsworth Collieries, and Mr. Bach's comment added much to the interest.

The evening was given over to the annual banquet which took place at the Hotel Biltmore. The menu was said to be a "Hoover" menu, but if that be true it proved how little Mr. Hoover has done to take the joy out of life even on a wheatless day. In a letter to the secretary of the institute, Bradley Stoughton, Herbert Hoover said:

"I am glad to hear that the Conservation Division of the Food Administration is to dine in spirit with the American Institute of Mining Engineers. Be cheerful about this dinner; every year the War goes on the butter pot will shrink in size—but it has disappeared in Germany. Some year or other, when we are living on the German ration—they will crack."

Banquet in New York and Visit to Princeton

The speakers of the evening were W. O. Hotchkiss of the War Minerals Committee, Bainbridge Colby, of the United States Shipping Board and President-elect Sidney J. Jennings. The retiring president, Philip N. Moore, who acted as toastmaster was somewhat deftly rebuked by Bainbridge Colby for saying in his introduction that our War Department was in the hands of a temporarily reformed pacifist and the Public Information Bureau in charge of a temporarily reformed muckraker. Quite a large number of persons who believe in keeping their wisdom under their hats, especially in the presence of foreign guests, protested in private against Mr. Moore's outspoken remarks.

The trip to Princeton, N. J., which closed the evening though made on one of the chilliest days was a most enjoyable termination to a notable meeting. Lunch was served in Proctor Memorial Hall of the Graduate College, and President John Grier Hibben, of Princeton University, addressed the visitors. The guests then walked or rode by automobile to the aviation field and later visited the Museum, Nassau Hall, the Library and Holder Hall. In the Museum was a piece of New Jersey coal. The small chunk of mineral came from a quarry near Princeton and looked like the real article though doubtless the state will never be a coal producer.

Coals having different composition require different sizes of combustion space. The chemical characteristics that are most likely to affect the size of the combustion space required for a given set of conditions are the quantity and quality of the volatile matter. The quantity of the volatile matter is shown by its percentage as determined by the proximate analysis. The quality of the volatile matter is indicated approximately by the ratio of volatile carbon to available hydrogen, and probably also by the oxygen content of the coal on a moisture and ash free basis.—*Bureau of Mines Bulletin No. 135.*

Licensing Plan for Jobbers

Fundamental changes in the regulations governing coal jobbers will be put into effect by the Fuel Administration on Apr. 1. A licensing plan has been devised which, it is believed, will protect the legitimate jobber and will make impossible abuses which had sprung up under the previous regulation.

It is the belief of the Fuel Administration that the jobber should receive remuneration for service only. Just as a professional man has nothing to sell other than service, it is the intention of the new regulations to limit the income of the jobber to actual service performed.

The new regulations have been worked out with much deliberation. The advice of representative jobbers has been sought at every turn. In the light of last year's experiences, it is believed that a plan has been worked out which will be fair to the operator, fair to the bona fide jobber and fair to the consumer. It is believed that this is the first instance in which a system has been worked out which will permit a retailer to buy, at his option, of the producer or the jobber. In eliminating unnecessary middlemen, the Fuel Administration believes it will point the way to the elimination of middlemen in other industries.

The complete text of the new regulations follows:

Rule 1. A licensee who, as owner or selling agent for another, sells coal or coke without physically handling the same on, over or through his, or its, own vehicle, dock, trestle or yard, shall not ask, demand or receive for such coal or coke more than the price fixed by the President or the United States Fuel Administrator for such coal or coke f.o.b. cars at the mines or ovens, and in effect at the date of the sale thereof, plus 5c. per ton of 2240 lb. of anthracite coal, when such licensee incurs the expense of rescreening such coal at Atlantic or Lake ports for transshipment by water.

Rule 2. A licensee who acts as purchasing agent of coal for and by authority of a retail dealer or consumer without becoming the owner thereof, may charge a purchasing commission not exceeding (a) the sum of 15c. per ton of 2000 lb. of bituminous coal, (b) 5 per cent. of the delivered price of smithing coal when certified in writing by the retail dealer or consumer that such coal is to be used for smithing purposes only, (c) the sum of 20c. per ton of 2240 lb. of anthracite coal when delivery of such coal is to be effected at or east of Buffalo, or (d) the sum of 30c. per ton of 2240 lb. of anthracite coal when delivery of such coal is to be effected west of Buffalo, provided that such licensee may add to such purchasing commission 5c. per ton of 2240 lb. of anthracite coal when such licensee incurs the expense of rescreening such coal at Atlantic or Lake ports for transshipment by water. The combined purchasing commissions of any number of licensees who act for a retail dealer or consumer in the purchase of a given shipment or shipments of coal shall not exceed the commissions herein allowed for one licensee. No licensee shall charge any purchasing commission as purchasing agent of coke for a retail dealer or consumer. Any coal or coke purchased by a licensee for any consumer or retail dealer may be charged and invoiced to such licensee as agent.

Rule 3. No licensee shall ask, demand or receive any commission, charge or profit as broker or purchasing agent from any consumer or retail dealer for the purchase of any coal which is owned by such licensee, or in which he or it has any direct or indirect interest, or for selling which such licensee is entitled to receive any commission or compensation as selling agent or otherwise, or which was produced from a mine controlled, directly or indirectly, by such licensee, or by the controlling owners of such licensee, or from a mine whose owner or the stockholders, members, or partners who control such owner also control directly or indirectly such licensee.

Rule 4. No licensee shall rebate or pay to any owner of a mine producing coal or to any person directly or indirectly interested therein, either as stockholder, partner, member of association or otherwise, any part of any commission, charge or profit received by such licensee.

Rule 5. No person exclusively employed as salesman by a single producer or exclusively employed as purchasing agent by a single consumer, shall be required to procure a license for the performance of his duties as such salesman or purchasing agent.

Rule 6. Contracts relating to bituminous coal made before the President's executive order of Aug. 21, 1917, and contracts relating to anthracite coal made before the President's executive order of Aug. 23, 1917, which are bona fide in character, and enforceable at law, shall not be affected by Rule 1 hereof, but coal purchased or sold under such contracts shall be governed by Paragraphs 8, 9, 10 and 11 (as modified by the order of the United States Fuel Administrator, dated Nov. 8, 1917), of Publication No. 9 of the United States Fuel Administration.

Rule 7. Every license shall be in such form and shall contain such terms, provisions, limitations and restrictions as the United States Fuel Administrator may from time to time prescribe, and the same shall be subject to modification and revocation by him, and shall be issued and held subject to these and such further rules and regulations as he may from time to time establish.

The foregoing rules and regulations approved and promulgated this 15th day of March, 1918, to become effective 7 a.m., Apr. 1, 1918.

In his proclamation authorizing the licensing of jobbers, the President says in part:

All persons, firms, corporations and associations (except those specifically exempted by said act of Congress, producers and miners of coal and manufacturers of coke, distributing exclusively their own product, and retail dealers, as defined in the United States Fuel Administrator's order of Oct. 1, 1917, Publication No. 7, engaged in the business of distributing coal or coke as jobber, broker, selling agent, purchasing agent, wholesaler, or in any capacity whatsoever, are hereby required to secure a license on or before

Apr. 1, 1918, which license will be issued under such rules and regulations governing the conduct of the business, as may from time to time be prescribed by the President of the United States or by the United States Fuel Administrator acting by virtue of the authority heretofore as aforesaid, or hereby, delegated to him by the President.

Fuel Administration's Zoning Plan

After months of work the Fuel Administration announced Mar. 22 a zoning plan which will revolutionize coal distribution in this country. While every state will be affected to a more or less degree, the principal effect of the order is to restrict Eastern coal to Eastern markets and make it compulsory for the Middle West, as well as other sections, to use coal produced near-by. Expectations of the Fuel Administration in this regard are indicated by the following extract from the Fuel Administration statement:

In addition to the saving in transportation the system will provide for the possible retention of something like 5,000,000 tons of coal for the eastern states which heretofore has gone west all rail. This tonnage can be readily utilized in the East. As an indication of the saving to be effected by the system, it will eliminate the movement of more than 2,000,000 tons of Pocahontas coal to Chicago and other western points over a haul of about 660 miles. Chicago can obtain this tonnage of coal, and under this system must obtain it from southern Illinois mines with an average haul of 312 miles. Allowing for the differences in quality in the two coals there will be thus saved 11,400,000 car miles or very conservatively figured 285,000 car days. This will permit 14 additional round trips of 20 days each from West Virginia mines to zone destinations, permitting an additional production of at least 700,000 tons of Pocahontas coal.

Coal of particular quality needed for the making of byproduct coke, the manufacture of gas, for metallurgical purposes or like uses, will not be restricted to the zone in which it is produced, but will move under license. Permits will be issued to the individual consumers having need for this special-purpose coal where a supply is not available in the producing districts which are permitted to ship into the consuming zone where the consumer is located. Applications for permits must be made to the Zone Permit Bureau of the United States Fuel Administration in Washington.

With regard to lake cargo coal, the Fuel Administration makes the following statement:

The present indications are that it will not be possible to furnish as much lake cargo coal during the coming seasons as was moved during the season of 1917. Therefore, to make up for the decreased amount of lake cargo coal, consumers in the Northwest must obtain a greater supply of Illinois coal.

The plan does not prohibit the movement of lake cargo coal from any of the mines located in the Pittsburgh, Connellsville or Westmoreland Pennsylvania districts; in the Altoona, Meyersdale or northern Pennsylvania districts; in the Fairmont, Kanawha or Kenova-Thacker high-volatile West Virginia districts; in the New River or Pocahontas low-volatile West Virginia districts; in the eastern Kentucky districts located along the Chesapeake & Ohio Ry., the Sandy Valley Elkhorn Ry. and the Louisville & Nashville R.R. (Hazard and McRoberts fields); in the southern Kentucky districts located along the Louisville & Nashville Ry. and the Cincinnati, New Orleans & Texas Pacific Ry.; in the Ohio districts as a whole.

The plan does not take into consideration the movement of coal to the lower Lake Erie ports for vessel fueling purposes. This tonnage during the past lake season amounted to approximately 1,650,000 tons.

In discussing the effect of the order in Pennsylvania, West Virginia, Virginia, Maryland, Delaware, New Jersey, New York and the New England States, the following statement is made:

With the exception of the Pittsburgh district, the consuming territory in all of these states requires movement of coal eastbound in the same direction as the preponderance of railroad traffic for export or inland delivery; and because of the congested conditions on all of the eastbound railroads in these states, it has been found unwise as yet to circumscribe the markets to be reached by coal produced in one portion or another of the producing field described, for, in order to move the maximum tonnage, it is necessary to preserve the greatest possible flexibility in the number of sources of supply for and the available routes of transportation to the consuming markets.

Weekly Coal Production

By producing 11,228,000 tons of coal during the week ended Mar. 9, the mines of the country made a better showing than in any other seven-day period since the week ending Nov. 24. Anthracite shipments were 42,207 cars. Beehive-coke production was 733,000 tons. Byproduct coke production aggregated 446,371 tons. These marked increases are accounted for almost entirely as being a result of an increased car supply. The figures are those of C. E. Lesher, the statistician of the U. S. Geological Survey.

To Consider Hall-Zimmerman Case

Appointment of a committee to consider the situation in connection with the Hall-Zimmerman case, which involves the placing of cars assigned for railroad fuel, has been authorized by the directors of the National Coal Association. The committee is authorized to employ counsel and to determine what participation, if any, the National Coal Association should take in the case.

Brief Washington Notes

The recent increase in price granted to a part of Preston County, West Virginia, has been made to apply to the entire county. Operators not included in the original order were able to show that similar mining conditions exist throughout the county and that transportation costs are the same.

Dr. H. A. Garfield, the fuel administrator, is being urged from many quarters to make a tour of the states most affected by fuel regulation. It is believed that a clearer understanding of the objects sought to be gained by the Fuel Administration will be had if Dr. Garfield finds it possible to make a series of speeches in those states where coal matters are of great moment.

Brewers in the United States expect to reduce their output 30 per cent. during the period between Apr. 1 and July 1. Action to this end has been undertaken

in compliance with a suggestion from the Fuel Administration. This is another step in the interest in promoting the conduct of war industries to the fullest possible extent by curtailing fuel consumption among the industries which are not so essential.

J. Howard Magee, of Cumberland, Md., has been appointed assistant district representative of the Fuel Administration for Maryland; D. M. Carl, also of Cumberland, has been made assistant district representative in the coal field consisting of Mineral, Grant and Tucker Counties, West Virginia, and in the Maryland fields; J. M. Cover, of Cumberland, another of those appointed, is assigned to certain operations in Somerset County and in the Indian Valley district.

A three-day diversion of practically all coal from the Pocahontas and New River fields to tidewater has had the effect of meeting the bunker situation and supplying a certain reserve. The order was cancelled at midnight Mar. 14. To meet the requirements of the United States Shipping Board, however, all operators in the two fields, whose mines are adjacent to the Chesapeake & Ohio and Virginia railroads, will continue to ship to tidewater. The only exception to the order is coal for the making of byproduct coke.

Certain increases in the freight rate on anthracite coal proposed by the Norfolk & Western R.R. have been allowed by the Interstate Commerce Commission. The increases approved are those of 15c. or less per long ton. It is provided that the rates between points in official classification territory shall not be increased by more than 15c. It also is provided that where a through rate between two such points is made by combination, appropriate provision will be made so that the aggregate increase shall not exceed 15c. per ton.

New Prices in Somerset Field

New prices for the Somerset field of Pennsylvania have been announced as follows: Run-of-mine, $2.60; prepared sizes, $2.60; slack or screenings, $2.60. The prices which they supersede are run-of-mine, $2; prepared sizes, $2.25; slack or screenings, $1.75. The Somerset field has been enlarged by adding to it the territory tributary to the Baltimore & Ohio between the Somerset County line and Indian Creek.

Contracts Limited to 65 Per Cent. of Mine's Capacity

That not more than 65 per cent. of a mine's production be contracted for is asked by the Fuel Administrator. By leaving the remainder to move on current orders and instructions from the Fuel Administration, there will be little interference with the normal movements of coal and the usual relationships between consumers and producers, Dr. Garfield believes. "Large consumers, including railroads who contract for their fuel requirements," he says, "should not contract for more than 65 per cent. of the output of any one mine or coal-mining company."

Legal Department

PASSING ACROSS SHAFT BOTTOM AS CONTRIBUTORY NEGLIGENCE—A section of the Iowa mining statutes reads: "At the bottom of each hoisting shaft there shall be constructed a safe and convenient traveling way around the shaft for employees and animals, and it shall be unlawful for any person to pass across the shaft bottom in any other manner than by the traveling way herein contemplated; except such employees as may be necessary to perform the work at the bottom of the shaft or those engaged in making repairs." Applying this section in the case of Dennis vs. Gibson, 165 Northwestern Reporter, 1030, the Iowa Supreme Court denied the right of plaintiff to recover damages for injury sustained by him in being struck by a descending cage while he was crossing the shaft. The court holds that neither custom nor an emergency to prevent cars from piling up, nor considerations of convenience will excuse violation of the statutory injunction. The exception in the statute of employees working at the "bottom of the shaft" is limited to those who work in the actual bottom of the shaft and excludes employees engaged in loading and unloading cages.

RELIANCE UPON MINE FOREMAN'S ASSURANCE—The Kentucky Court of Appeals has affirmed judgment in favor of plaintiff in the case of Deskins vs. Consolidation Coal Co., 199 Southwestern Reporter, 779, growing out of injury to plaintiff through a fall of slate while pulling coal stumps under direction of his foreman, who ordered him to remove them notwithstanding plaintiff's suggestion that that might be dangerous. The court said: "Though the safe-place doctrine might not have been applicable if plaintiff of his own volition had proceeded with the work, such is not the case presented. According to plaintiff's evidence, he would have stopped work on the pillar had it not been for the foreman's command. Hence, if no command had been given, he would have been subjected to no further danger. In obeying the command he had the right to rely upon the superior judgment of the foreman and assume that the foreman would not subject him to any unnecessary peril, and to proceed with the work, unless the danger was so obvious that an ordinarily prudent person in his situation would have refused to encounter it. Under these circumstances, the mere giving of the command, if negligently done, was of itself sufficient to impose liability on the company, although no other evidence was shown. . . . On this question the evidence was sufficient to take the case to the jury."

Coming Meetings

AMERICAN ASSOCIATION OF ENGINEERS will hold its fourth annual convention May 14 in Chicago, Ill. Secretary, A. H. Krom, 29 South La Salle St., Chicago, Ill.

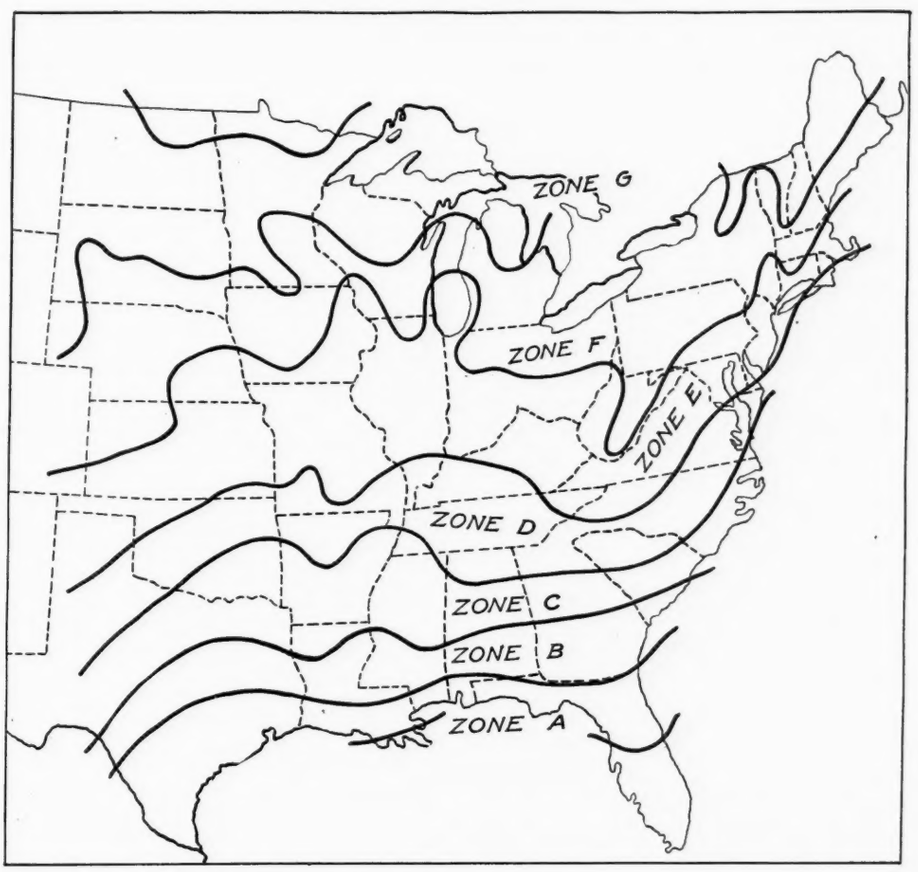
AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS' annual convention June 26-28 at Atlantic City, N. J. Secretary, F. L. Hutchinson, 25 W. 39th St., New York City.

AMERICAN INSTITUTE OF MECHANICAL ENGINEERS will hold its spring meeting June 4-7, at Worcester, Mass. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

INDIANA RETAIL COAL MERCHANTS ASSOCIATION will hold its spring meeting Apr. 10 and 11, at the Hotel Severin, Indianapolis, Ind. The meeting will be a strictly business affair, most of the time being given to discussion of retailers' problems. Secretary, R. R. Yeagley, 703 Fidelity Trust Building, Indianapolis, Ind.

Plant a Garden

and Save Food for the Soldiers



THE dates given for planting in the seven zones into which the eastern part of the United States has been divided are considered to be the best for planting. Earlier and later plantings often can be made, however, with fair chances of success.

Zone	Group One	Group Two	Group Three	Group Four
A	Jan. 1-Feb. 1	Feb. 1-Feb. 15	Feb. 15-Mar. 1	Mar. 1-Mar. 15
B	Feb. 1-Feb. 15	Feb. 15-Mar. 1	Mar. 1-Mar. 15	Mar. 15-Apr. 1
C	Feb. 15-Mar. 1	Mar. 1-Mar. 15	Mar. 15-Apr. 1	Apr. 1-Apr. 15
D	Mar. 1-Mar. 15	Mar. 15-Apr. 15	Apr. 1-May 1	May 1-May 15
E	Mar. 15-Apr. 15	Apr. 15-May 1	May 1-May 15	May 15-June 1
F*	Apr. 15-May 1	May 1-May 15	May 15-June 1	May 15-June 15
G*	May 1-May 15	May 15-June 1	May 15-June 15	(†)

*For the crops grown. †Season too short for this group.

GROUP ONE (may be planted two weeks before last killing frost).—Early cabbage plants from hotbed or seedbox, radishes, collards, onion sets, early smooth peas, kale, early potatoes, turnips and mustard.

GROUP TWO (planted about the date of last killing frost).—Beets, parsnips, carrots, lettuce, salsify, spinach, wrinkled peas, cauliflower plants, celery seed, onion seed, parsley, sweet corn, and Chinese cabbage.

GROUP THREE (should be planted two weeks after last killing frost).—Snap beans, okra, and tomato plants.

GROUP FOUR (cannot be planted until ground is well warmed up, about a month after last hard frosts).—Lima beans, pepper plants, eggplant, cucumbers, melons, squash and sweet potatoes.

Courtesy "New York Globe"

THE LABOR SITUATION

EDITED BY R. DAWSON HALL

General Labor Review

There are two outstanding features in the news of the week. The first is the threatened split in the union and the second the determination apparent on the part of the miners to absorb by increased wages all the increases in the price of coal granted by the Fuel Administrator.

The anthracite region has always questioned the advantage of its labor connection with the bituminous field. The operators have declared against what they regarded as the dictation of the soft-coal mine workers. The anthracite mine workers have believed that the anthracite labor interests were only the tail of the dog to be wagged at his pleasure.

THREATENED SPLIT IN ANTHRACITE REGION

It is useless to deny these declarations, for the anthracite industry is convinced that they are true, and, being a closely-knit district, argument is impossible. Besides, are not all the leading men in the organization from the soft-coal regions and is not the greater part of the money spent in those same bituminous fields? Of course most of it is raised there, but in far greater proportion is it spent there. Area after area has been unionized or its unionization attempted at great expense to the organization. It is only necessary to name a few fields thus assisted to prove this contention: Colorado, western Kentucky, eastern Kentucky, eastern Tennessee and Alabama. The anthracite region in recent years has not seen any such long strikes, and it has never been involved in lawsuits such as those in Arkansas with the Coronado Coal Co. and the Pennsylvania Mining Co., and those in West Virginia with the Hitchman Coal and Coke Co.

Probably the trouble will blow over as it has in the past and no new organization will be formed. However, the rumor from Shamokin was to the effect that mine workers from Northumberland, Schuylkill and Columbia Counties met Sunday week and at least discussed this subject if they did no more.

COLORADO UNION MEN ARE BADLY DIVIDED

The trouble in Colorado is another thorn in the flesh of the international board. What little unionization has been effected in that state is in danger of being swept away. The signatories to the contract in that state are the Victor-American Fuel Co., the Routt Pinnacle Coal Co., the Black Canon Coal Co., the Curtis Coal Co., the Elk Creek Mining Co., the Colorado and Utah Coal Co., the Wolf Park Leasing Co., the Gibson Lumber and Fuel Co., the Monument Valley Coal Mining Co., the Bear River Coal Co., the Louisville Coal and Land Co., the Alliance Coal Co., the Black Canon New Maitland Coal Co., the George McNally Coal Co., the Rapson Coal Co., the International Fuel Co. and the Evans Fuel Co. The Victor-American is the only concern of prominence. The reader will note that the Colorado Fuel and Iron Co. and the Rocky-Mountain Fuel Co. are not on the list. Nor is the Puritan Mine, which John R. Lawson declares signed up with him before the split.

The unionization is therefore quite incomplete and already a new union has sprung up. All this and no more is the outcome of the expenditure of six million dollars since the year 1910. One cannot regard the defection as negligible even though it be true, as Robert H. Harlin says, that there were only 34 delegates at the rump convention representing 11 local unions, four of which repudiated the action of their delegates at the next local meeting. There were, however, according to the same authority only 70 delegates at the regular convention. The defection seems to be quite important in view of the small size of the field and its moderate degree of unionization.

The other development to which reference has been made is the determination of the mine workers to overlook the fact that the Fuel Administration is raising coal prices in order to make production possible at all the operable mines of a given district. On Mar. 15 B. M. Clark, the president of the Executive Board of the Association of Bituminous Coal Operators of Central Pennsylvania, refused to meet the mine workers to discuss the increase in wage for which they are asking.

OHIO SERVES NOTICE OF INTENTION TO STRIKE

News comes from Martins Ferry, Ohio, to the effect that in the closing meeting of the twentieth annual session of sub-district No. 5, John Moore, the state president, declared that the operators of Ohio were trying to get an increased price for coal and he added that if they got the increase he "would be after a piece of it for the miners" even if it was necessary to have a strike equal to that of two years ago, which lasted 14 months.

Lee Hall spoke to the delegates about the importance of clean coal, but he declared that the reopening of old mines was partly to blame. He said that "unless there is an improvement in the mining so that clean coal is produced no one will want Ohio coal in the future."

The strike threatened in Preston County, West Virginia, at the mines of the Kingwood Coal Co. did not materialize. The district officials insisted that the men remain at work. The Fuel Administration is to solve the problem whether the Kingwood Coal Co. should be compelled to buy powder and sell it to its miners at less than cost. Selling anything at less than cost is an anomaly and should be done away with. However, those concerns which have hitherto never sold powder are given an advantage now that the powder has to be sold at a loss. The price presumably is fixed high enough for the operators to sell powder at a loss or otherwise those who do not would be put out of business.

The returns from district No. 24, Michigan, indicate that former President John Crutchfield, one of the radical socialist element, has defeated Robert Gaffney by an overwhelming majority in the election for international board member. William Muir becomes president. He had 16 more votes than Frank O'Donnell and the race was so close that for a long time it was thought that O'Donnell had the job cinched. William Stevenson becomes vice-president and Fred Dando is reëlected secretary-treasurer. O'Donnell and Gaffney were both men who desired to keep the mines working steadily throughout the duration of the war.

KENTUCKY MINERS WANT A UNION POORHOUSE

Despite the fact that the United Mine Workers are opposed to the idea of building homes for aged and disabled mine workers the mine workers of western Kentucky at the recent session voted, at the suggestion of President W. G. Duncan, in favor of building a $20,000 home at Central City, Ky. The general sentiment has been that the mine worker would prefer a pension and to pass his declining years with those who are near and dear to him. Only recently John Mitchell, the former president of the United Mine Workers, issued a statement opposing the erection of a home for the aged and infirm.

The mine workers also recommended that the Government intervene to secure that powder be sold them by the operators at a lower cost. At the present prices no one but operators will sell the miners powder, but that is not enough, they want the operators to accept an even larger loss in handling powder than that which they now sustain.

A stand was taken at this session against the practice of mine operators in making contracts with railroads to supply them with the full output of the mine. These mines get all the cars and the other mines have to divide up what are left and so run irregularly. The men perforce have to leave the mines that have no output contracts.

Conditions in the Drumheller field, Alberta, Canada, are somewhat hard to determine. Between the days when the Rosedale men won't work—or rather when some of them won't work—and days when there are no cars, but little work is done. On Mar. 12 the mine operators of British Columbia made a protest against Bill 27 (Coal Mines Regulation Act.), which provides for an 8-hour day from bank to bank for all employees at mines. The operators complain that wages have increased 35 per cent. since 1907 and the cost of production $1.10 a ton. They declare it is impossible to replace Chinese with white laborers for at the mines on Vancouver Island 52½ per cent. of the employees are Chinese and the proportion throughout the entire province is 28½ per cent.

Possible Anthracite Labor Split

It seems that the risk of a split in the ranks of the United Mine Workers which will cleave the anthracite and bituminous contingents from one another is more possible than was at first thought. The anthracite men keenly resent the fact that the bills for which they are to be assessed are, by chance, incurred by bituminous mine workers and not by their own men.

One can only wonder at this point of view. If the men at the anthracite mines believed that the action of the union was wrong in the Coronado Coal Co. case and if they thought that the union should refuse to permit the formation of a local at an operation like the Hitchman Coal and Coke Co., which made contracts with each individual mine worker precluding him from joining a union, then their action could be understood. But breaking up for a mere geographical reason is absurd. Or is the argument more mineralogical? Anthracite is more mineralized than bituminous coal; therefore the miner of bituminous coal is a person of no interest to the anthracite miner. Was ever argument more flimsy?

But, like many arguments, the worse they are the more convincing they seem, and Frank J. Hayes, the president of the United Mine Workers, has felt compelled to send telegrams to several national organizers to take charge of a situation which James Matthews, the district president of the Schuylkill region seems unable to control. The mine workers are determined not to pay the 50 per cent. increase in dues levied by the international convention at Indianapolis in January, which increase is effective Apr. 1.

The union officials are certainly badly scared by the developments. They have even issued an order that the increase in dues shall be kept in the anthracite region instead of being sent to the national treasury of the organization. It is announced that 20 per cent. of the money that each local union would send into the national treasury, with the increased dues, will be returned to the district and local treasuries. Instead of getting 55c. from each union, the national organization will only receive a net amount of 40c., while the district treasury and local treasury will receive 5c. each.

Bernice Mine Workers' Decision

There are only two large corporations in the Bernice field, of Sullivan County, Pennsylvania. That field lies off by itself at some distance from the area commonly known as the northern anthracite field. These two concerns are the Northern Anthracite Coal Co. and the Connell Anthracite Coal Co. The mine workers in both of these recently presented grievances before the Anthracite Conciliation Board which, unable to agree, turned the matter over for decision to Charles P. Neill, the umpire of the board. The men in both cases ask for payment of a 10 per cent. increase under the terms of the agreement of May 20, 1912. The companies had granted only 5½ per cent. The mine workers were not organized until recently and had been unable to make their demands articulate.

The arbitrator found that the Northern Anthracite Co. was a party to and was therefore bound by the decision delivered by the Strike Commission in 1902 and also by the terms of the agreement of May 20, 1912. This later agreement provided for an increase of 10 per cent. over and above the rates established by the award of the commission. The umpire decided that the employees of this company were entitled to this increase and directed that it be paid.

The umpire also said that the Connell Anthracite Co. was not organized until after the award of the commission and so was not in any way bound by its terms. He decided that the increase of 5½ per cent. that it paid to its employees was a voluntary act on its part. For this reason he did not sustain the grievance and denied that the employees were entitled to any additional increase under the old agreement.

Kansas Patriots Sweep Howat Aside

A correspondent recently wrote as follows:

Alexander Howat, president of the mine workers in the Kansas district, failing to induce the men to recognize his authority and listen to his arguments in favor of contract breaking, has recently issued what purports to be a supplement to the biennial contract. This incorrect reprint misleads the miners as to contract conditions and is causing unwarranted discontent in some fields.

The practice with reference to contracts and supplemental agreements is for the operators to print and issue copies to their members, and for the union to print and issue other copies for the use of the union membership. Heretofore there has never been any variation in these versions, exact reproductions being published, so that the men knew just what the agreements were.

Late in February, however, a book was issued at Pittsburg that appeared in all respects to be the text of the agreement signed in Kansas City last spring as supplemental to the biennial agreement. On the title page is the statement that the book contains the agreement made by the Southwestern Interstate Coal Operators Association. The last page bears the names, as signatures, of the association's officers. But the agreement as printed varies radically from the true contract and its supplement.

In the section pertaining to the Osage field, for instance, the scale is given 50c. higher than that actually agreed upon. This higher scale as printed was operative under orders from Dr. Garfield between Jan. 19 and Mar. 1, but it is no longer in force. The Osage miners being in possession of these apocryphal agreements, are up in arms to compel the fulfilment of the terms of this pseudo-record. As might be expected much trouble is brewing.

There are many instances, similar to the one quoted, where the contract of the book varies from the contract actually signed. The operators are studying it, comparing the terms in it with the original agreements as actually accepted, and they are publishing the facts broadcast for the information of the mine workers and the general public.

Suspicions against the patriotism of the Kansas miners have long been harbored in some quarters. But it has recently been proved that if they can shake off the demoralizing influence of unscrupulous leaders they will prove just as good citizens as mine workers anywhere.

All but one of the mines in Kansas that had been shut down in violation of the contract have reopened. In every case Alexander Howat, the president of the Kansas district, has appealed to the mine workers and ordered the strike to go on, but without avail. In fact the open revolt against the authority of Howat is the most gratifying development in the Kansas labor situation that has appeared for many months.

The Smith, Scott & White Contracting Co.'s mines were shut down on Dec. 28 because of the refusal of the mine workers—as individuals—to report for work. Howat had advised this action, and he insisted throughout the suspension that there was no strike and nothing whatever that

called for arbitration. In fine, he said, that Tom and John and Pete were not coming to work for reasons of their own, but whenever they felt so disposed they would return.

It was, however, quite well understood that if the operators would refrain from assigning men to jobs which the miners did not want to do, the miners would return to work. As the matter of striking was quite fully covered in the contract, the miners could not strike as a body without violating its terms and without being subject to a heavy penalty. Hence Howat's "individualistic" method of quitting work.

When thus on strike, or "sulk," or whatever you may term it, the miners held several meetings at each of which Howat pleaded with them to stay away from work. The last meeting was held Feb. 26. For hours the men listened to the pleading of their president, but they had listened even longer to their loyal instincts, and they decided to go back to work.

Returned as They Had Quit—As If Unorganized

There was no announcement that the strike was at an end, but the men all went back to the strippings on Mar. 1, not as a union but as individuals. However, the subject in controversy will now be taken up in the manner provided by the contract. The men have lost $35,000 in wages, and the country has lost about 50,000 tons of coal, and that at a time when the shortage of coal was most acute. No one gained anything but the pro-Germans.

The strike at the Jackson-Walker Coal and Mining Co.'s mines was a real farce. The outcome was the same, but it came sooner. The men found out that they were being used for somebody's ulterior purposes, and they decided that they would abide by their contract and the principles of the saner of their leaders.

The resumption of work Mar. 1 at the Jackson-Walker mines marks the early demise of the abortive National Bookkeepers and Company Weighmasters Union of which Alexander Howat was the organizer, and first and only national president.

It was formed, it is said, with the express purpose of circumventing the Washington penalty provision. If the mine workers could not strike without violating their pledge and paying a fine, this new union, unpledged and too small for official cognizance, could strike at its pleasure and give the mine workers the opportunity for remaining idle that they might happen to covet or have coveted for them by Alexander Howat.

But the bookkeepers were not so anxious to serve the ends of the mine workers as to raise their own wages. They struck though they have received two advances during the past year. Their places were quickly filled, so the great scheme did not work. In consequence it was necessary for the mine workers to strike, and this they did in sympathy with the union bookkeepers.

Howat, President of Bosses and Bossed

The operating companies naturally regarded this new development of unionism with disapproval, for not only did it attempt to circumvent the contract but it aligned the weighmasters with the mine workers, whereas the mine workers are supposed to be kept in check by the weighmasters. With the weighmasters hand in glove with the miner, the operator felt much as the miner would feel if the check-weighman he paid and appointed were to join some operators' association and put himself subject to its rulings. As the new order of things threatened to put it within the power of two or three men to close the works down, the operators felt justified in looking for new men when the strike occurred.

The miners in two of the mines stayed out ten days, and then voted to return to work, resuming operations Feb. 27. The other three mines did not resume until Mar. 1. When the bookkeepers and weighmasters saw that the miners were not going to stand back of them, and that the clever plan was failing, they met and adopted resolutions of extravagant loyalty to the Government and declared that to avoid any appearance of seeming to interfere with the production of coal at a time when the country needed it, they would temporarily suspend their demands. But the jobs of the members of the new union, even after they had divorced themselves from it, were no longer open.

The two labor difficulties above outlined were ended largely through the efforts of representatives of the United Mine Workers, who were able to make plain to the miners how dangerous a course it was to follow the unethical suggestions of the Kansas president. In consequence of the strike the Jackson-Walker miners lost $41,000 in wages, and the country 18,000 tons of coal.

Low Tonnage Is No Fault of Miners

The mine workers of Illinois at their meeting in Peoria, Ill., tried hard to absolve themselves of all blame for the coal shortage. It is true that the output has been so restricted by lack of equipment that the many strikes in the state during the past year did not greatly reduce the output of the whole state or country, though that cannot be conclusively proved.

The mine workers' attempts to defend their action shows how strongly they feel now the necessity for steady work. Where labor is concerned, the public has a ready power of forgetting. If the Illinois mine workers continue in their present diligent attention to the country's needs, in a few months they will have absolved themselves more completely than can be done by any vigorous protestations.

Miners Apologize for Taking Time to Talk

There is even a note of apology from them regarding the number of men made idle by the conference. They feel, in their patriotic enthusiasm, that now is the time to work and not to talk, and they are in a defensive mood like patriots discovered in what is, on its face, not a creditable business. They explain that ordinarily between 800 and 900 mine workers would be withdrawn from productive labor by such a conference for about two weeks, and the railroads would have to provide that number with transportation.

But this time the number is reduced one-half. The basis of representation is changed so that now each delegate acts for 100 miners instead of 50, as heretofore. The reader will please note the spirit of these Illinois men. It was perhaps of slow growth, but it seems to have attained an intensity with which few regions can compare.

President Frank Farrington, in his annual report, declared that if cars were provided the Illinois miners could produce 59,000,000 more tons annually than they are producing. He backed up his statement with figures, showing the production since 1915. "For the fiscal year ending June 30, 1916," he said, "Illinois mines worked an average of 163 days and produced 63,673,530 tons of coal. This was sufficient to fill the demand of the time. The railroads then had adequate facilities to move the requisite tonnage.

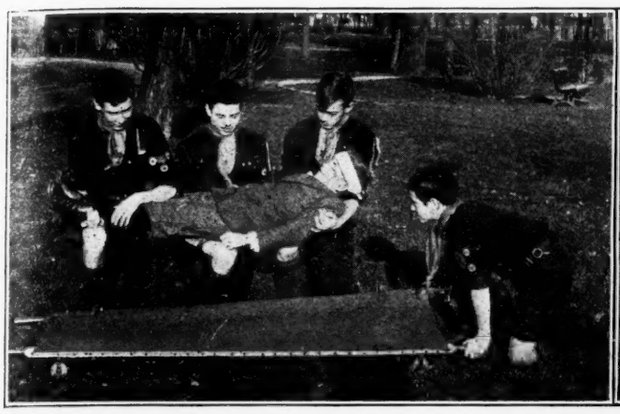
Mine Workers Always Waiting on Somebody

"No one had then any reason to complain, except the miners themselves. It was they who had suffered by being given just a little more than half-time employment. Then the abnormal demand began to hit the country. To move the tonnage taxed the railroads to the point of breaking down. In that period, the fiscal year ending June 30, 1917, Illinois attained her maximum production and mined 78,983,527 tons of coal. And still the mines worked an average of only 179 days, or 134 days less than full working time. Had the mines operated for full time during this period and maintained the same ratio of production as obtained during the days of actual operation, Illinois miners could and would have mined 138,110,093 tons of coal; but due to a lack of transportation facilities to move the tonnage from the mines, they were able to produce only 78,983,527 tons, or 59,126,562 tons less than their potential capacity."

Farrington bitterly denounced the Industrial Workers of the World. "The declared policy of the Industrial Workers of the World," he said, "is to destroy the United Mine Workers of America. For years we have allowed them to tear at the very vitals of our union. Emboldened by our indifference, they are becoming more and more active."

We Need These Boys at the Mines

A Big Opportunity is Open to the Boys Around the Mines to Get Back of the Government and Help in the War



PERCY S. BULLEN *writing in the* New York Times *recently showed the good work Boy Scouts can do under stress of war conditions.*

"On a recent visit to England I found that the Boy Scouts were in the zenith of their career of national usefulness. They had been the means of releasing many thousands of men for service at the front. You found them everywhere with their standards of manhood, integrity, and chivalry to girls and women, acting as civil guards on all sorts of occasions, policing the streets for processions, safeguarding property, bearing ambulances, and acting as dispatch carriers. The usefulness of the organization in America during the war and its great possibilities of expansion, judged by what has been accomplished elsewhere, have not yet been fully brought home to the public and more especially to parents who might well be proud to have one or more Boy Scouts in the family."

Boy Scouts in America are selling Liberty Bonds, and War Savings Certificates; they are aiding the Food Administration and even helping the Fuel Administration. We need their enthusiasm and their services.

EDITORIALS

Bandar-Log or Bee?

FROM the time a monkey opens his eyes in the morning until drowsiness overpowers him at night, he is pretty much a law unto himself. He does anything he wants to, when he wants to, and as long as he wants to. A whimsical individualism sums up his philosophy of life. The day's end finds him just where he was in the morning. The tribe—bandar-log, Kipling calls them—respond to any leader of the moment and as quickly quit him to follow another or to fetch up individually with a brand-new, suddenly-caught and all-absorbing idea.

Like any other philosophy, it is a charming one if you like the net results of it. The monkey does. On the contrary, the bee doesn't. The bee insists on organization by functions. His philosophy is self-sacrificing, vigorous and stern—a Spartan philosophy applied to production. "Beefficiency" is the Taylor system raised to the *n*th power; and the bee doesn't get the honey.

If the bee had sense, he'd maintain his present organization a few hours a day—which would easily supply his wants—and be a bit bandar-logish the balance of the time. But he cannot. The reason is because he doesn't think. He's a machine that is a part of a bigger machine. On the other hand, if he did think, he'd immediately tend to become individualistic, and the moment that happened the organization would begin to wobble. There would be argument about how the comb should be built, who should build it, who should boss it, how much honey should go to each; societies for the prevention of this and that would be formed. Social workers must eat; so must bosses; so must societies for the prevention of things.

Nature did not see fit to devise a species having the merits of both bandar-log and bee—a sort of bandar-bee.

A bandar-bee would help us a lot just now. It would be the real super-thing. It would be highly coöperative for a few working hours and highly individualistic the rest of the day. It would accept the notion that working together bee-fashion is the answer to the question of maximum production in minimum time; but being a super-thing, it would reject the notion that the honey gathered should all get into the hands of a few crafty speculators to be sold back at the speculators' price. It would control distribution with the same bee-like coöperative efficiency that it used in production.

It would accept the axiom that self-expression is necessary to a thinking super-thing—that monkey play in a monkey way is after all the best fun in life. It would approve the bandar-log system, in which the individual in his idle hours may sit on a limb and philosophize, or try a new way of weaving twigs, or join the bunch in a frolic, or play with the kids.

Obviously the bandar-bee would be a clear and direct thinker. He would be an intense individualist—so intense an individualist that in order to have the maximum number of hours a day for individualism, he would sink his individualism when he came to his production and distribution hours, and be an intense coöperator. He would treat as wasters those superbees who would work themselves and others without any thought of the monkey play, merely to amass a personal pile of honey. There would be piles of honey, adequate personal piles, but not huge ones.

Individualism and self-interest are about the same thing. The date when the bandar-bee will appear on the earth depends upon the amount of hammering which mankind must undergo, to pound into it a realization of the fact that in the long run self-interest can be most permanently promoted by intense and unselfish coöperation in production and distribution.

Why Raise Only Raw-Material Rates?

NO ONE will ever applaud the Interstate Commerce Commission, not even when it is interred, which interment a large section of the public hopes will come soon. It has just increased railroad rates. That seems hopeful. When one hears it one is prone to believe that the commission has become reasonable and really appreciates railroad conditions and the difficulties which their administrations—private or Governmental—have to confront.

But the commission had, nevertheless, to do wrong. It places the increases on raw materials, on which the rate is high, rather than on manufactured goods which are carried at too low a rate. Of course, this may not do the harm under Governmental supervision that it might do under private management. The Government should, and probably will, scorn profits and show a preference for the handling of such raw materials as the country most needs.

But it is surprising that the rates on raw materials are chosen for increase when everyone knows that the advance in rates should not have been so placed. It would have been bad enough to have put an equal increase on all classes. It is essentially wrong to correct first an evil which is the least crying. Raw materials had at least a good argument for an unchanged rate, but manufactured articles never possessed even the very shadow of a right to that contention.

The attempt being made to sidestep that responsibility and put the blame for rate increases on the demand of the railroads made when under personal management is deplorable. Everyone knows that the present managements desire the increases or they would not be granted. There is no new need for increased rates for railroad transportation. The regulation of the price of coal has actually made it less necessary. The only reason why it is granted now and was refused before is because the ox has a new master.

The ox is now paddocked in Washington, D. C., and it is recognized that all Washington cattle must be pro-

tected. No one ever cared what happened to the ox when it was at Wall Street, New York City. There it was gored far more cruelly. There it became a mere mangled corpse and was denied veterinarian aid. Now, by Government regulation of coal prices, its precious hide is protected, yet nevertheless its new master is most solicitous about its condition, and the veterinarians who refused medicine before are ready with their potions.

No one can regret that rates are raised, even though they are the wrong rates. Higher rates were necessary. They could not come too soon. However, we are permitted to regret that the wrong rates were raised—that the unfairly proportioned raw-material rates were changed first and may, perhaps, be the only ones that are to be changed. We may also be allowed to regret that many of the increases were in the freightage rates of primary necessities, anthracite, live stock, fresh meats, petroleum, grain, cement and lumber, the high cost of which so many people are deploring. But no matter where the railroads get their operating money it is a source of rejoicing that the revenue is to come in.

We have always contended that the producer of essentials should be allowed the bigger profits, for his is the greater service. No one can deny the logic of this. The only answer is that it is more important that the cost of essentials shall be low, that the public may live. Now the Government steps in. It has its chance to make profits on nonessentials, and immediately it jacks up the cost of essentials over which beforetime it exercised such a careful ward. Was there ever more inconsistent action?

Green Hands vs. Chance-Takers

THE problem as to which kind of employee was the greatest menace to a mine and to himself—the green hand or the chance-taker—received consideration at a recent meeting of the American Institute of Mining Engineers. Those who discussed it did not presume to say that they had the matter solved, but even when the problem is answered one way or the other it will perhaps make little difference for the work of safety will be best secured by the same methods no matter whether a green hand or an old hand is most to blame.

Take an illustration from the field of crime and penology. We know there are men who are hardened in evil and our hope has always been not so much to correct these men as to prevent the young men who are continually replacing these old offenders in the work of each generation from starting out wrongly in the battle of life. The public schools and the institutions for the recreation of the young are expected to do a work of character formation more effective than any work of character reformation.

Likewise in the matter of the dangers to green hands and old hands there is in the future a surer solution to be found in the training of green hands than propaganda among chance-takers can ever afford.

The green hand, well coached at the first by trained men, properly convinced that a careless, reckless miner is a bad miner, will be careful from the very beginning, and good habits, once learned, are apt to persist. The hope is in emphasizing safety when the man is hired and especially when he is hired for the first time. The workman must be given not merely a sort of inchoate dread of his work, but a definite system of safety practices to be followed unerringly.

As it is we put the men in the mine to work with men whom we know practice unsafe methods, with men who habitually run risks. We place them in the mine entirely untrained, and we leave it to a chance visit of the mine foreman at an opportune moment to work the reformation. But the seeds of carelessness and slackness have perhaps by this time already been sown by an old and reckless miner.

Have You Plans for Next Liberty Loan?

WE ARE not asking if you are planning to buy bonds, because, of course, you are. You will buy all you can. But that is not enough. How many are you going to *sell?* To what extent have you laid plans to sell them? Lay your plans carefully so that when Apr. 6 comes every man at your mines will know that you are a patriot and a citizen ready and willing to help in the three-week drive that is going to put over the biggest loan that we, the world's biggest people, have ever floated.

The Kaiser is not a side issue in our lives. He is the main issue. We cannot let the Prussians win, and we cannot prevent them from winning unless we make their defeat the main purpose of our lives till the war is ended. On Apr. 6 the immediate interest of everybody will be to see that the great loan is subscribed and oversubscribed. Every manager, superintendent, mine foreman, fireboss and miner will be a Liberty Loan seller and a Liberty Loan buyer, first; and a worker in the industrial army, second. Everybody will be thinking Liberty Loan from the time he hears the alarm clock in the morning till the moment he lifts the window sash before retiring—and in the watches of the night also.

If you have any stories as to how Liberty Loans have been sold in your community and as to the manner in which you purpose to sell the bonds let us hear from you. Perhaps we can help, and we know your suggestions will help others.

Fidelity, Industry and Intelligence

IF A man is faithful, industrious and possesses average common sense, he has the three chief requisites to success. The coal industry has several hundred such men, who through the exercise of these simple virtues have advanced from insignificant positions to posts of responsibility and importance. Nothing is more inspiring to those who are struggling against heavy odds than the story of some other fellow who has persisted and eventually won out. He does not necessarily have to be the president or the general manager—a man who has raised a family, sent his sons through college, and owns his own home, is to that extent successful. We want a number of such stories for our Success Number, which is to be issued Apr. 13. Pick out your subject today and let us have the sketch by the first of April. If you can furnish a photograph, we will be pleased to print it with the article. This is one way to help the coal-mining business by heartening some of the men in it.

DISCUSSION BY READERS

Prohibition and Labor

Letter No. 1—My attention was strangely arrested by the full-page cartoon that appeared in *Coal Age*, Mar. 9, p. 463, showing miners drinking in a saloon. The scene there portrayed brought a train of thoughts to my mind.

Before attempting to discuss the relation of prohibition to labor, however, let me say that I very much regret that Samuel Gompers, president of the American Federation of Labor, has seen fit to array himself against the adoption of the Federal Prohibition Amendment in New York State. It would seem that the class of workers whom Mr. Gompers represents, in his official capacity, is composed of those who are most injured by the prevalence of the liquor traffic. For this reason he, of all others, should have stood firm for prohibition.

No argument is needed to make clear the fact that the laborer who indulges in liquor to excess loses not only a portion of his earnings, but, likewise, to a large degree, his ability to earn. Drinking to excess is necessarily followed by a period of enforced idleness when the man must sober up before he can return to work. If he should return, however, and start to work when under the influence of liquor he would not only endanger himself but his fellow workers by reason of his irresponsible acts.

To Protect Men Against Themselves

To protect a man against himself is reason enough for the enactment of prohibition, but there is yet another element that requires equal consideration. It is a duty that rests upon society requiring it to act in its own defense against the social evils that become rampant in its midst wherever liquor holds sway. There is, again, the duty incumbent upon every community to safeguard its homes against the degrading acts of those given to the drink habit, who by word and example persuade the young to travel the same downward road they themselves have followed to their ruin.

Every year makes it more apparent that the drink habit is a prevailing evil and its authorization by Government sets up an institution that violates the personal rights and liberties of the individual guaranteed by the Constitution. It is the individual's right to protect himself and his own from the inroads of evil and to intervene for the betterment of humanity. Every citizen has the right to live and build his home in the community where he earns his bread and to demand that the standards of that community shall be such as not to undermine the home.

There is, again, another side to this question of prohibition. Whatever affects labor affects the entire social life of a community and its productiveness. At the present time, labor is being urged to do its utmost to produce coal, food, steel, ships, airships and motors; while, at the same time, the draft is thinning out the forces of labor in the country. We are told that this is no time to attend to other matters, but that the war and its requirements are of the most vital importance.

Wars are won by clear brains and strong bodies, which are needed not only at the firing line but must be in the possession of every one of the great army of workers to whom the boys at the front are looking for support and encouragement. Clear brains are not the product of the saloon. There is, therefore, today, no greater menace to the successful prosecution of the war than the presence of the saloon in our mining camps and industrial centers. Food is required to win the war, and it should not be wasted or used in the manufacture of drink that is a hindrance to production.

It has become a popular saying, "A quarter a day keeps the Kaiser away." Let every drinker ask himself whether it will not be better to spend his quarters for thrift stamps instead of for beer. Loyalty to the cause permits of but one answer.

Reply to Samuel Gompers

In reply to Mr. Gompers, who says, "Aren't we asking about enough of our German and Austrian citizens to give their loyal support to this Government, against that of their own, without injecting an enactment that will forbid them gratifying their normal tastes?" Let me answer, unconditionally, No! Not when those "normal habits" conflict with and destroy the effectiveness of American citizens.

When the German, Austrian, Englishman, Frenchman, Italian, or Pole, comes to this country to establish a home, we ask him to become Americanized; and loyal American citizenship may demand, as it does today, the destruction of an industry that is and always has been an enemy to good citizenship.

In that case, the so styled "normal habits" of citizens of foreign extraction must give way to the higher demands of the country. This demand has been growing greater and stronger every year, until it is now overwhelming, and national prohibition will soon be welcomed throughout the land. GEORGE N. LANTZ.

New Straitsville, Ohio.

Coal Production and Booze

Letter No. 6—I was much interested in the letter of John Buggy, *Coal Age*, Feb. 9, p. 300, regarding the damage done to the production of coal by the tolerance of the saloon in mining camps and districts. I must admit, however, that I was somewhat amused at the suggestion offered as a means of curtailing this great evil.

Br. Buggy suggests that the Government limit the shipment of liquor to each mining district, allowing only a prescribed percentage of the accustomed consumption. This, he says, would provide but a small amount that each man could receive and thereby prevent

drunkenness. He asks that the Government issue orders requiring saloonkeepers and bartenders to furnish tickets to their regular customers, which would restrict the number of drinks a man could obtain.

My own idea is that the Government, having already stopped the mannfacture of whiskey in the state, should go further and do the same in regard to all drinks that use articles of food in their preparation, and serve no good purpose but render men unfit for work.

While I am no temperance man, it does seem strange to me that the Government should permit articles of food to be used in the manufacture of liquor, which does not serve the purpose of food and has never been known to help anyone who was given to the habit of drinking. On the other hand, any man who has reached 26 years of age can not fail to have observed many occasions when someone who has imbibed too freely has caused much harm by his irresponsible acts.

It is my firm belief that, should the Government enact a law prohibiting the manufacture and sale of all intoxicating drinks, the effect would be to increase the efficiency of the miner fully 10 per cent.

Eldorado, Ill. MINE MANAGER.

Letter No. 7—I agree most heartily with everything that S. D. Hainley has said in his letter, *Coal Age*, Feb. 16, p. 346, in regard to how the booze habit affects the coal production in the country's present crisis when the demand for coal has been so great that many sections of the country have been unable to obtain an adequate fuel supply.

It is not my habit to put up a hard kick in the interest of temperance; but I can see no good growing out of the confirmed habit of many men, who repeatedly drink themselves drunk, until they are unfit for work. If I should spend $1 in two months, for drink, I would feel it was too much, especially where I have mouths to feed and a family to clothe. When a man can secure but three days a week for work it requires the strictest economy to provide these necessities.

Our town has about 300 inhabitants, and I am frank to say the consumption of beer, in this place, surpasses anything I have seen before. For example, at one house where there are but four boarders there were delivered 35 quarter-kegs of beer in one evening, which is not an uncommon amount of liquor supplied to many other houses in the place.

How Drink Affects the Operation of a Mine

The effect of drink on the operation of a mine has not been exaggerated in the letters previously written. When a mine foreman wants to start he finds that he must run empty handed as the "booze hoisters" always fail to show up when needed. Not infrequently there is no machine runner on hand and the miners must go home because there is no coal to load. He is reported to be at home sick.

A motorman fails to show up, and the foreman puts a less experienced man in his place to run the machine. Before long there is a wreck and the mine must now lay idle for several hours or the balance of the day. Like the machine runner, this man is reported sick when, in truth, both are drunk and unfit for work.

I can indorse the suggestion made by John Buggy to the effect that the Fuel Administration give its closest attention to the production of coal and eliminate these causes that are more than any others responsible for the short supply of coal. As Mr. Buggy asserts, the way to do this is to limit the shipments of liquor to mining districts and camps to a small percentage of the usual consumption. They will then not be able to get enough drink to harm them or render them unfit for work and every man will be on the job.

Injustice to Steady Workers

It would seem that the general attitude of operators toward their men who lose much time by reason of drink is not what it should be, while men who are always in their places are forced to run machines and drive motors when it is their desire to cut coal.

When first starting work in this mine I was given a job of spragging and, later, was asked to assist the motorman. I was not fitted for the work because the coal was low; but the foreman refused to give me a place to dig coal until I spoke of quitting. He then gave me a wet hole where half a dozen men had quit before me; first, however, making me promise to help him out when he needed a spragger. This was done to punish me for not being willing to continue to fill the places of men who failed to show up because of drink.

A similar case was that of a friend who wanted to dig coal, because he could make more money so doing than by driving a mule. The boss replied to him, "All right, Bill, pick yourself out a place that will suit you; but when I am in need of a driver I want you to help me out." These instances show that many good workers who never drink suffer through the drink habit of others, whose places they are called upon to fill.

Waterman, Penn. A MINER.

Mine Cars

Letter No. 4.—Referring to L. B. Paul's letter, *Coal Age*, Feb. 16, p. 346, one is reminded that the chief consideration, at the present time, is the reduction of operating expenses, and that this depends, in a high degree, on attaining the greatest mechanical efficiency possible in mining equipment. This is particularly true in respect to mine haulage, which must be put on a highly efficient basis.

Besides the many points relating to efficient mine haulage, such as grades, curves, clean roads and well ballasted roadbeds, there still remains an important factor that is not given the consideration it demands. Today, operators are beginning to realize that bearing friction is the one factor that can be put on a high efficiency basis without interfering with the daily output of the mine.

There is no need to dwell at length on the fact that roller bearings of the proper kind and properly installed on mine cars greatly increase the length of trip a mine locomotive will haul; or that peak loads are greatly reduced and occur with less frequency than where the old type of plain bearings are in use. The reduction of peak loads means a longer life for the locomotive, especially if this is of the storage-battery type, which is rapidly growing in popular favor for gathering hauls.

In the use of plain bearings on mine cars, a heavy item of expense is the lubrication of the wheels, which

is a matter that requires the daily attention of a "greaser." The quantity of oil spilled at the tipple or on the shaft bottom where the cars are greased, and the larger amount that is wasted along the track, by the oil running out of the hub, call for a large expenditure for oil, to say nothing of the wages paid the greaser. This question of lubrication is one of the first items, in connection with mine haulage, that would engage the attention of an efficiency expert.

In contrast with this expenditure when operating with plain bearings, it should be observed that properly designed roller-bearing wheels require lubrication but once in about three months; and every drop of lubricant placed in the wheel is utilized for the purpose it was intended and does not drip along the haulage road.

I heartily agree with Mr. Paul in his conclusion that the installation of properly designed antifriction roller-bearing equipment means a saving of many dollars to the company. Experience has convinced me that roller-bearing equipment is a money-saving investment. Where the old style bearing must be replaced gradually with the new type, it is a fact that every ten cars equipped with the new bearings cause a drawbar pull not exceeding one-half of what it was when those cars were equipped with plain bearings, and the upkeep for the cars is far less than formerly. N. G. HERBERT.

Huntington, W. Va.

Letter No. 5.—I quite agree with L. B. Paul, who states in his letter, *Coal Age*, Feb. 16, p. 346, that there are a number of anthracite mines using mixed roller stock, and refutes the idea advanced by H. M. Crankshaw, in his article, Jan. 26, p. 191, that it is inadvisable to mix roller-bearing cars with those having plain bearings in the same mine.

To my own knowledge, there are many collieries in the anthracite region, and I doubt not in the bituminous region also, where the cars are mixed, those having roller bearings being operated with others mounted on plain bearings. There seems to be no mechanical reason why this cannot be done; and, on the contrary, there are many reasons why it must be done where a mine equipped with the old type of plain-bearing cars desires to change to roller bearings

ADVANTAGE IN A GRADUAL CHANGE OF EQUIPMENT

By changing the cars gradually from the old plain-bearing type to the new and more efficient roller bearings, a colliery can take advantage of the fact that a certain number of the cars used in the mine are going through the shops for repairs, each month, and the change of bearings can be made with less expense and delay at that time and the old equipment will be replaced when it is worn out.

While it is true that a great advantage will be gained by changing the equipment from plain to roller bearings where a colliery is using a thousand or more cars; at the same time, it must be acknowledged that to discard the old gear for the new, at one time, would not only lay the mine idle for a considerable period but would necessitate the investment of a considerable capital to be charged in bulk to the equipment account.

The cost of installing good roller bearings on mine cars is much in excess of the cost of plain bearings, but the former have a longer life and cost less to maintain. For this reason, it is good policy to make the change, but this should be done in a way that will not interfere with the regular operation of the mine or embarrass the company financially.

It was the practice of the railroads, a few years ago, to handle items of this nature under the charge of "betterment expenditures" and finance the investment from the earnings rather than drawing on the capital. This required that such expenditures should be distributed over a period of time, as determined by the earnings of the company.

I have observed more or less of the same practice adopted by some collieries. In a few instances, collieries have started to equip with roller-bearing cars at least two years ago, and the change is not complete today but is progressing steadily. However, as a colliery nears the completion of such a change, I have observed that the tendency is to hurry the matter, because of the marked advantage shown by the adoption of the new equipment. In none of these cases has there seemed to be any difficulty in the operation of a mine owing to mixed rolling stock. H. P. GIRARD,

Kingston, Penn. Engineer.

Relative Size of Intake and Return Airways

Letter No. 7.—The question of mine ventilation is only second to that of safety, to which it is closely allied. In opening a mine, either a drift, slope, or shaft, the first thing to be considered is timber and then air, for it is certain one cannot advance far underground without both of these.

In regard to ventilation, let me say here that I have always preferred to install a blower rather than an exhaust fan for several reasons: (1) The blower appeals to me as the stronger ventilator. (2) It can be installed at an opening provided with a manway and this, in my opinion, should always be the intake opening, so as to afford air for the men going to and coming from their work. (3) When using a blower the haulage road is the return air-course, and this avoids the annoyance and trouble due to snow and ice obstructing the haulage road in winter, which is the case when that road is made the intake for the mine.

In regard to the question of which should be the larger, the intake or the return airway, I answer that, for practical reasons, it has always been my preference to make the return airway the larger of the two and use it as the main haulage road.

LOADED TRIPS SHOULD MOVE WITH THE AIR

By adopting that system the loaded trips all move with the air current, while the empty trips must be hauled against the air. However, it is clear that the empty trips moving against the air will create less resistance than would result when the haulage road is made the intake, which requires that the loaded trips be hauled against the air.

Again, it is always considered the best practice to have the grade of the haulage road favor the movement of the loaded cars. In that case the empty cars ascending the grade will move slower and cause less resistance to the air current against which they are traveling.

These considerations, together with the arguments already advanced by other writers, convince me that the best practice is to make the return airway the larger, unless some particular conditions require the contrary.

The plan suggested by W. H. Clark, *Coal Age*, Feb. 23, p. 387, providing one main intake airway of ample size and two main return airways, one for each side of the mine, in addition to the haulage road, would be an expensive undertaking in our low seams. However, the Pennsylvania Mining Law, art. 6, sec. 4, requires the adoption of such an arrangement in mines generating gas.

The law provides further that, in a nongaseous mine working a considerable area, with main entries 5000 ft. or more in length, the operator must either haul the men to and from their work, or provide three main entries, one of which shall be used exclusively as a traveling way. S. D. HAINLEY.

Osceola Mills, Penn.

Letter No. 8.—Kindly allow me to say a word in reply to the letter of John Rose, *Coal Age*, Feb. 9, p. 299, who seems to think that the return airway of a mine should always be larger in sectional area than the intake airway. Like Mr. Rose, I have always held this opinion and answered such a question, when given in a mine foreman's examination, by saying that the sectional area of the return airway should be the larger.

It is my belief, however, that the conditions existing in the mine must govern this matter. If a mine is very gaseous and the main haulage road is made the intake of the mine, it may be necessary to increase the sectional area, in order to provide a sufficient amount of air at the working face to meet the requirements of the law.

Mr. Rose asks that someone figure out and tell us whether the intake or return airway should be the larger, in that case. In my opinion, it is not a question to be answered by figures, but must be judged from a practical standpoint. For example, in a mine where the haulage road is the return airway it should, in practically every case, have a larger sectional area than the main intake air-course. On the other hand, in a mine where the main haulage road is made the intake, the question of the relative size of the intake and return airways can only be decided by a competent man of wide experience who has charge of the mine.

In general it may be said that a haulage road, under good roof, can seldom be driven too wide, for the considerations of the health and safety of the miners. There will then be little trouble experienced from the resistance offered by the moving cars to the passage of air, whether the haulway is the intake or the return airway of the mine. CLAUDE CARRUTH.

Collinsville, Ill.

Electrically Driven Mine Pump

Letter No. 2.—The inquiry of John Martin, *Coal Age*, Jan. 26, p. 214, relative to the troubles he experienced in operating an electrical mine pump located at the bottom of an 800-ft. slope having a 25 per cent. grade, recalls a similar incident in my own experience with an electric pump.

Practically the same difficulties were encountered in the operation of this pump, as those described by Mr. Martin. He states that his pump worked badly, at times bending the piston rod or breaking the castings of the belt-wheel journal, besides burning out the armature on certain occasions.

It was suggested in the reply to this inquiry that the difficulty may have been due to a lack of adjustment in the controller of the motor, whereby the pump was started too suddendy and unable to overcome the inertia of the water. Allow me to suggest that the pump may have been operated at too high a speed.

In my own case, the difficulty was overcome by reducing the speed of the pump by using a smaller pinion. It appears that Mr. Martin's pump is belt-driven, but, in that case, it should have been equipped with a properly adjusted compensator or controller to regulate the speed.

Again, perhaps the power of the motor was not sufficient to work against the discharge head; or, it may be that the power was taken from a direct-current circuit delivering current to a number of haulage motors. While it is possible to run some small pumps with direct current and give them little attention, larger pumps require constant watching, under these conditions. With so little data at hand, however, it is hardly possible to give a conclusive answer to the question asked.

Thomas, W. Va. W. H. NOONE.

Miners and the War

Letter No. 7—The present coal shortage has excited the greatest interest in the mind of every loyal citizen of this nation, whose natural resources and man-power are not equalled in any other portion of the globe. This being true, there should be no shortage of coal such as exists in the country today.

Almost a year ago President Wilson made his appeal to the coal miners of the United States to do their utmost to produce coal, explaining that the efforts of the Government and the brave men sent to the front would be of no avail if the coal miners did not do their part. Looking about us for evidence of successful coöperation in the matter of producing and transporting coal to the points where it is needed, one fails to find any united efforts of the miners, operators and railroads to promote the fuel supply.

There is an old saying that might well be adopted as the slogan in this country. It is, "United we stand, divided we fall." For the sake of humanity and to maintain our own sacred rights there should be unity of effort, without which we shall fall under the mailed fist of that autocratic government that has sought to rule the world.

A short time ago there was an editorial published in *Coal Age* [Dec. 8, p. 981] comparing the efficiency of miners under the day-labor and piecework systems. As there stated, "the union and piecework . . . have combined to reduce efficiency in the mining of coal." It would seem a practical impossibility to establish, as the union has done, a uniform wage scale that will be equitable and just to every worker. Too many mine workers are possessed of the I. W. W. ideals, and it is a crime to regard the work of such men as constituting a good day's work in mining.

Only last summer, a few other men and myself were sent into the mine, as a nightshift, to extend a certain motor road. Two or three of us did our best to perform a good day's work, to which the others took exception, claiming that we would receive the same pay whatever work was performed. They would not listen to reason and even threatened to bring charges against us, as working in the interests of the company instead of supporting the Brotherhood.

Uniform Day Wage Unjust and a Failure

In my opinion it must always prove a failure to attempt to establish a uniform day wage, by which the same amount is paid to every man whether he does a good day's work or lays down on the job. Merchants and manufacturers compete with one another in the superiority of the goods they produce at a given price. Why should not the same principle apply to the work performed in the mines, so that each man would be paid according to his efficiency.

It would seem that the attitude of the miners' union on the one side and of the coal operators on the other is very much like that of the cat and the dog. They continually refuse to work in each other's interests, although those interests are common; namely, the production of the largest possible daily tonnage, for which the miner would receive an increased pay and the operator an increased profit on the output of his mine.

Let me say, in closing, that the war makes every month, every day and every hour valuable, and each miner must do his utmost and labor with his best skill and ability to produce the needed coal. Let us, as miners, do our honest share to stand behind the boys fighting at the front. War is a cruel business, but it purifies the soul. A Humble Miner.

———, Ill.

Letter No. 8—The relation that the coal miners of this country bear to the war will no doubt admit of a wide range of discussion, but I desire to offer a few remarks that will be confined to the more simple aspects of the question.

To increase the production of coal and assist in its equal and prompt distribution to points where it is most needed, the Government has assumed control of the situation. At this early stage of the undertaking, it would be mere speculation to attempt to forecast what advantages will accrue to the coal-mining industry, throughout the country, on this account. We can only hope that the result will be successful and that the problems of coal supply and distribution, together with the more perplexing questions that arise in regard to labor and prices, will be satisfactorily solved.

As Thomas Hogarth has said in his letter, *Coal Age*, Dec. 22, p. 1067, "America is at war," and I would add that the great army of mine workers in this country must not lose sight of the fact that her enemy is powerful and resourceful. If it is true, as is claimed, that the winning of the war depends primarily on the production of coal, then it is a fact that the miners of the country constitute a tremendous factor in prosecuting the war to a successful issue. The responsibilities that rest on their shoulders are indeed great. To what extent our miners will stand up to their part in this world drama remains to be seen.

While the loyalty and patriotism of the great mass of coal miners, in this country, cannot be questioned, it is still true that there are some among them who have little or no regard for the nation's interests, but are more concerned in taking a selfish advantage of the present situation to get for themselves more wages and shorter hours. They are not interested in increasing the output of the mines, except as they can profit thereby.

While believing that coal miners, as a class, are as patriotic as any other industrial workers, it has proved a sad spectacle to witness an army, amounting in the aggregate to 10,000 mine workers, laying down pick and shovel, at different times and places, for causes that are trivial in comparison with the one great aim before us.

Disposition and Habits of Many Miners

In his letter, Jan. 12, p. 70, W. H. Luxton cites an instance where the miners refused to proceed to work one morning because the train that was to take them to the mine was three minutes late, though it is most likely the delay was unavoidable.

An experience of more than thirty years among miners makes it difficult for me to agree altogether with the statement made by "A Miner," in his letter, Feb, 2, p. 259, which reads, "The public should cast aside the idea that the miner is thriftless and extravagant." If the average miner was as much concerned in saving his money as many are in making it, the most of them would have substantial bank accounts.

It is a common occurrence for miners to work hard and make big money and yet have not a dime three days after pay day. When times are good, it is easy for the miner to believe that these conditions will continue and he gives little heed to laying by a store. The man who earns $5 a day and yet, by frugal living, saves some of it, is of greater service to the country than one who earns $8 a day and squanders it.

Miners Need To Practice Economy

There is no class of workers who need to be counseled more in regard to practicing economy than miners. It is important that they should remember, as stated in the last letter to which I have referred, that "the process of increasing prices and then increasing wages to meet them, it is certain cannot go on forever." This miner takes the correct view. Reaction in war prices will sooner or later take place, and, as he points out, retrenchment will surely come.

As one considers the tremendous possibilities in the savings of miners, the need of such a movement appears the more urgent. Suppose, for example, 100,000 of our half million coal miners saved enough to invest in a $200 Liberty bond and another 100,000 purchased a $100 bond, while still another like number invested in a $50 bond. There would result, from this source alone, a total investment of $35,000,000.

What a monument that would be to the patriotism of coal miners! The efforts put forth by these men, in saving their earnings, would be as much to their own benefit as it would assist in the prosecution of the war. The present need would thus prove a blessing in disguise in providing many a miner with a competency that would be a great help to him later.

Dayton, Tenn. John Rose.

INQUIRIES OF GENERAL INTEREST

Seasonal Freight Rates

In connection with the discussion of seasonal freight rates and the interesting letter that appeared in *Coal Age*, Feb. 23, p. 386, suggesting a more equitable adjustment of freight rates in the transportation of coal, it has occurred to me that it is important to know the actual difference in cost of transportation, or the relative operating expenses of railways per ton-mile, for the summer and winter seasons of the year.

I would like to ask if there is any information of this nature available at the present time, or if it can be secured from any reliable source.

As stated in the letter to which I have referred, the rating of freight charges, for the transportation of coal, in accordance with the conditions prevailing at different seasons of the year, would make possible and amply justify the storage of large quantities of coal by dealers and consumers, and would tend to equalize the burdens resting on the railways throughout the year.

The proposition gives rise, however, to an important question, as the suggested rating of freight charges involves a consideration of the operating expenses of railroads, as the season changes from summer to winter and *vice versa*. I believe that this information will assist in the intelligent discussion of the question.

Philadelphia, Penn. EFFICIENCY ENGINEER.

This correspondent has drawn attention to an important factor in the matter of securing a more uniform and equable production and distribution of coal to large consuming centers. As is well known, when conditions in the country are normal the demand for coal increases with the advance of the winter season.

The seasonal demand for coal not only imposes an unnecessary burden on the carriers, calling for the transportation of a larger tonnage during the inclement seasons of the year; but has the effect, besides, of throwing many mines idle during the summer and producing a shortage of coal in the winter, at a time when it is most needed.

The question is a broad one, involving many considerations, and we hope that it will be intelligently discussed by coal operators, coal consumers and dealers, and railway interests, with a view not only to keep the mines running regularly throughout the year but to insure a never failing supply of coal at a reasonable cost.

It may be well to mention here that the principle of reducing the price of coal to domestic consumers in the spring and advancing it each month till the fall is a wise provision, as it tends to equalize the distribution of domestic coal throughout the summer, when each household should lay in its winter supply, as far as practicable. This principle need not apply, however, to steam plants and other large consumers for industrial purposes.

Replying to the question of the relative cost of the operation of railroads, on a ton-mile basis, in the winter and summer seasons, it may be stated that there is no information of this nature now on record, as far as our knowledge goes. That such a comparative tabulation of costs would be interesting and valuable cannot be doubted, and we hope that the *Railway Age* and others in a position to secure or furnish the necessary statistics from which this information can be deduced will take the matter up as being of equal interest to railways and coal producers.

None but railway men appreciate fully how much the cost of transportation in winter exceeds that in the summer season. This is not wholly due to the necessity of removing snow from the tracks and the increased difficulty of making track repairs at a time when the roadbeds are frozen and rails are more frequently broken. The increased cost of operating is largely the result of the effect of sleet on the rails, which decreases the tractive force of the locomotive and compels it to haul lighter loads or operate with double-headers.

As an offset of this increased expense in winter, however, extension work and other track improvements are pushed more urgently in the summer season when such work can be performed at a less cost. Further discussion of this question is urged by *Coal Age* as being of the utmost importance to the coal industry.

Methods of Working

Kindly permit me to present the following proposition to the readers of *Coal Age*, asking for their suggestions as to the best method of working the seam to obtain the largest possible extraction of coal at the least cost.

The seam has an inclination of 15 or 20 deg. and outcrops near the surface, which is practically level. The coal may be said to have a thickness of 10 ft., and is overlaid with a soft sandy shale that makes a weak roof and will require to be well timbered. The floor of the seam is a sandy shale.

I want to ask what plan of working and system of haulage would be best adapted to develop this seam. Assuming that the rooms are driven 15 ft. wide, what thickness of pillar should be left between them? It should be stated that the surface is traversed by numerous large streams and the seam is subject to many irregularities and faults or "pinchouts."

———, Ky. SUPERINTENDENT.

This is a practical question in coal mining, and we hope that it will receive careful attention from those whose experience will enable them to offer helpful suggestions. The plan of working suggested should be illustrated by rough sketches, showing the system of haulage employed and the method of timbering and ventilating proposed.

EXAMINATION QUESTIONS

Miscellaneous Questions

(Answered by Request)

Ques.—A hemp-center, wire rope, 1 in. in diameter, with 114 wires, has a breaking strain of 50,000 lb. If 19 wires in this rope are broken, what should be the safe load on the rope?

Ans.—This is evidently a catch question, which the alert candidate will answer that there is no safe load for a wire rope having so many broken strands. On the other hand, the unwary candidate will estimate that if the breaking strain for 114 wires is 50,000 lb., the breaking strain on each wire would be $50,000 \div 114 = 438.6$ lb. Then, since there are $114 - 19 = 95$ wires still remaining unbroken in the rope, the breaking strain of the rope would be $438.6 \times 95 = 41,667$ lb., and allowing a factor of safety of, say 5, the estimated safe working load would be $41,667 \div 5 = 8333$ lb., or somewhat greater than 4 tons. It is never safe, however, to rely on a wire hoisting rope having many wires broken, because the strain on the remaining wires cannot be correctly estimated, and the rope is liable to give way suddenly.

Ques.—What will be the weight of water in a boiler 48 in. in diameter, by 168 in. in length and having forty-eight 3-in. tubes? Calculate the number of gallons of water in the boiler.

Ans.—The depth of the water in the boiler not being given, the total capacity of the boiler will first be calculated thus: Assuming the dimensions given are the internal diameter and length of the boiler, respectively, its cubic contents, disregarding the tubes, would be $168(0.7854 \times 48^2) =$ say 304,000 cu.in. The cubic displacement of forty-eight 3-in. tubes, in this boiler, is $48 \times 168(0.7854 \times 3^2) =$ say 57,000 cu.in. This makes the total capacity of the boiler when full, $304,000 - 57,000 = 247,000$ cu.in.; or $247,000 \div 231 =$ say 1070 gal

Ques.—When the diameter of a valve, the steam pressure, the length of the short arm and the weight are known, what is the rule to find the place to hang the weight?

Ans.—The question should state that the steam pressure is the maximum allowable pressure, and ask for the place to hang the weight so that the boiler will blow off at the given pressure. However, assuming that the "short arm" means the distance from the fulcrum to the valve-stem, the rule for finding the distance from the fulcrum to the weight, so that the valve will blow off at the given pressure, is as follows: Multiply the area of the valve in square inches, by the steam pressure expressed in pounds per square inch, and that product by the distance from the fulcrum to the valve-stem, also expressed in inches. Finally, divide the last product by the weight, in pounds, and the quotient will be the distance from the fulcrum to the weight expressed in inches.

For example, taking the diameter of the valve as 3 in., its sectional area is $0.7854 \times 3^2 =$ say 7 sq. in. Then, if the distance from the fulcrum to the valve-stem is 4 in. and the weight of the ball 60 lb., the desired blowoff pressure being 90 lb. per sq. in., the total pressure on the valve when it is lifted by the pressure of the steam is $90 \times 7 = 630$ lb. The moment of this pressure acting on the valve is $630 \times 4 = 2520$ in.lb. Finally, dividing this moment by the weight of the ball gives, for the distance from the fulcrum to the point that the ball should be hung on the lever, $2520 \div 60 = 42$ in.

Ques.—How would you find the capacity of a water cylinder of a steam pump in gallons?

Ans.—First, find the piston displacement, when the pump is running, which is equal to the continued product of the sectional area of the piston expressed in square inches, the length of stroke, in inches, and the number of strokes the pump makes per minute. It is customary to assume an efficiency of 85 per cent. for the water-end of the pump. On this basis the capacity of the pump in gallons is found by multiplying the piston displacement, expressed in cubic inches, by 0.85 to obtain the actual volume of water handled per minute, and dividing by 231, which will give the capacity of the pump in gallons per minute.

Ques.—What are the necessary supplies that should always be on hand at a mine, for the safe working of the same; and what is your duty in the case when your supplies are not on hand when needed?

Ans.—In addition to the necessary supplies of timber, ties, rails, cap-pieces, brattice boards and canvas, tools, powder, fuse or squibs, oil, hay and other feed, together with the necessary nails, spikes, rail-splices and bolts, there should also be a first-aid outfit, including two or more sets of breathing apparatus, oxygen tanks, pulmotor, safety lamps of an approved type, stretchers, blankets, and water-proof coverings. A suitable ambulance should also be available for use in time of need.

Should any of these supplies be lacking at the mine, it is the duty of the mine foreman to notify the superintendent or order what is required himself.

Ques.—How should a person be treated who is suffering from mine burns?

Ans.—Exclude the air by applying a thin paste of baking soda (bicarbonate). Vaselin, olive, oil, fresh lard or cream are all good. Severe burns should be treated by a physician.

Ques.—If you were inspecting a place after an explosion and found that near the floor or bottom the lamp would go out, while half-way between the top and bottom the lamp burned normally, and near the roof the flame became lengthened, what would be the three mixtures?

Ans.—The indications of the lamp flame would lead to the conclusion that there was an accumulation of black-damp at the floor, and a body or layer of methane at the roof, while pure air occupied the center of the entry.

COAL AND COKE NEWS

Harrisburg, Penn.

Joseph B. Dickson, of New York, who with S. D. Warriner, president of the Lehigh Coal and Navigation Co. and W. J. Richards, president of the Philadelphia and Reading Coal and Iron Co., comprise the distribution committee on anthracite just appointed by Dr. Garfield, outlined, on March 15 the committee's plans. "The duties of our committee, subject to the direction of the United States Fuel Administration, will be to stimulate production; that is, to produce the greatest amount of anthracite coal by keeping all the mines operating to the fullest possible extent continuously throughout the year; to supply the requirements of the Government and apportion the balance among the various states and communities in a manner that will be fair and equitable to all and subject to the direction of the director general of railroads; to advise as to the routing and distribution of coal from the time it leaves the mines until delivered in the various states and communities, and we hope that by carefully watching this movement of coal over the railroads, using water and rail routes when practical, preventing more or less cross-hauling which has taken place in the past, to not only increase car mileage, but in doing so to enlarge production and increase deliveries to various states and communities.

"We also feel certain that with a close working arrangement and a complete understanding with the various state administrators that all sections of the country will be fairly and equitably treated in receiving their just proportion of the anthracite produced. It is not the province of this committee to either direct or distribute coal to the householder, this being absolutely cared for and attended to by the various state administrators."

To urge the making of the Susquehanna River navigable from Pittston, Luzerne County, to Baltimore, Md., instead of resurrecting the abandoned Pennsylvania canal, was the decision made at a meeting of the Pennsylvania Canal Boatmen's Association, business men, coal operators and manufacturers from all over eastern Pennsylvania held on Mar. 16. Hundreds of thousands of tons of coal and merchandise could be hauled annually, the boatmen explained, and they declared that it would not only relieve the railroads but would help much of the existing congestion during these war times and in the future.

It was pointed out that the opening of a waterway or channel in the Susquehanna would not be in competition with the railroads, as they cannot begin to handle the fuel and manufactured products now necessary to be carried from points of production.

That the rehabilitation of the old Pennsylvania canal, much of which has been filled in, with bridges and locks gone and miles of right-of-way used for railroad tracks, is out of the question was agreed to.

By the building of a series of dams 10 ft. higher than the low water mark at Sunbury, Berwick and Nanticoke, old boatmen asserted, and by dredging at low points, such a waterway could be constructed at a minimum of expense as to give a navigable stream for light draft boats of the type used on canals for the whole distance from the hard coal fields to tidewater.

Petitions will be presented to each Congressman along the right-of-way of the abandoned canal, and every effort will be made to secure the required legislation that will result in boats plying on the Susquehanna.

The state fuel administrator has suggested to the director general of railroads that resumption of operation of the Pittsburgh & Susquehanna R.R. could easily be accomplished by the New York Central operating this short line. The Pittsburgh & Susquehanna has not been operated since Feb. 18, when a payroll of about $5000 became overdue. More than 500 miners are employed at the 31 mines of the line, with a weekly production of 15,000 tons.

The Public Service Commission has announced a decision directing that the New York Central R.R. install a switch at the property of the West Branch Coal Co. in Clearfield County, saying that the railroad company must install the connections at its own expense and the remainder to be paid by the coal company. In case the parties cannot agree the commission says it will make an order.

The annual examination for applicants for certificates as mine foremen and assistant mine foremen in the anthracite region will be held at Harrisburg on April 23 and 24.

Fairmont, W. Va.

The coal operators of the Fairmont district, which includes 12½ counties of northern and central West Virginia as designated by the Fuel Administration, are on record as being opposed to the "assigned car" policy. The number of cars which should come into this region (Monongah district of the Baltimore & Ohio) is 1500 a day. The capacity of the mines at present, however, is not over 1000. The Baltimore & Ohio promised the office of the director-general of railroads to provide these, but the Baltimore & Ohio could not fill its promise either in getting the empties in or moving the loaded cars. There is a lack of motive power on the railroad which seriously interferes with the shipment of coal from this region.

Coal operators of the Fairmont district are expecting an increase in selling price any time. The cost-of-production sheets were filed in Washington last week by C. H. Jenkins, A. Brooks Fleming, Jr., T. W. Arnett, all of Fairmont, and A. C. Beeson, of Worthington, on behalf of the Fairmont Coal Club, and action has been assured before Apr. 1. The "thin vein" operators in several counties in the district have been granted an advance, and similar ventures in Marion and other counties are to make application shortly.

Charleston, W. Va.

Coal shipments from central and southern West Virginia, particularly from the Kanawha field, were tied up nearly all last week, not through the failure to secure cars but through flood conditions. From Wednesday until late Friday the Chesapeake & Ohio was unable to operate even passenger trains over most of its lines in West Virginia, trains being detoured over the Norfolk & Western Railroad. The Coal & Coke R.R. was also out of commission for almost the entire week. High water does not seem to have resulted in any damage physically to the mines outside of causing shutdowns.

Where flood conditions did not interfere, the car supply was the best it had been in several months, several hundred cars having been given the Fairmont-Clarksburg field last Sunday. As a result nearly all the mines in that section were able to work at full tilt at least during the first part of the week.

Operators in the Monongahela field are asking the Federal Fuel Administrator for a 40c. increase in the price of coal. Thirty-six companies were represented at the meeting held at Morgantown, where resolutions were adopted setting forth conditions under which the companies represented operated and requesting the increase referred to.

According to information obtained from the office of the Chief of the Department of Conscription and Enrollment, there are 1100 West Virginia miners in the military and naval service at the present time.

Much indignation has been caused by the tendency of some of the railroads to divert the fuel they obtain for use as railroad fuel to other purposes. Last week F. J. Patton, District Deputy of the National Fuel Administration, commandeered 431 cars of coal ordered by the railroads as fuel, which was over and above their needs. The coal commandeered was sent to steel mills, powder plants and concerns engaged in 100 per cent. war work. According to complaint made by coal operators, the railroads at times secure fuel at a price lower than the actual cost of production and dispose of their surplus where such coal would find a ready market at contract price.

Plans for operation on a large scale of their mines near Morgantown are being developed by the Pursglove-Mayer Coal Co., of Cleveland Ohio. They have a large acreage of Sewickley coal to develop.

As soon as they secure switching connections the Donohue-Shinn Coal Co. will begin to ship coal from their plant at Alexander, W. Va.

Arrangements have been made by the Barbour-Upshur Coal Co. to install a loop line tramway outfit for conveying coal. Such equipment is said to be the second of its kind used in the Fairmont-Clarksburg field.

After having their mines closed down for some time, Smith & Braun have reopened their mines again for the shipment of coal.

Arrangements are being made by Britt & Hornor, of Clarksburg, to open a new mine near Clarksburg.

Extensive repairs are being made to the tipple of Wyatt Bros., near Shinnston.

The Orville Coal Co. at Ojay, in the Guyan Valley Field of which S. E. Scholl, of Huntington, is general superintendent, is installing a six-phase rotary converter.

The work of installing equipment at its mines on Coal River has been begun by the Maderson Coal Co., of which A. J. Dalton at Omar is general manager.

A 150-kw. rotary converter and other equipment is to be installed by the Fall River Pocahontas Coal Co. at Roderfield. The general manager of the company is C. B. Smith, of Mayberry.

The offices of the Logan & Hazard Coal Co. are to be moved from Cincinnati to Huntington.

The Cheney Coal Co. expects to open a plant at Chesapeake on the Chesapeake & Ohio Ry. in the very near future. J. S. Cheney, until recently general manager of the Stonegap Colliery Co. at Glamorgan, Va., will manage the new operation.

Having been chartered in November, The Laurel Branch Coal Co. will install a power plant and begin mining coal in a short time from No. 2 Gas Seam. Meredith Moore, at St. Albans, has been made general manager.

The Don Coal Co. at Eskdale is building a new tipple for its No. 1 Mine.

W. E. Deegans and associates have purchased the Beckley Vein Co. recently chartered. The company's plant will be located at Pemberton, connecting with both the Chesapeake & Ohio and Virginian railways. The company expects to begin making shipments by Apr. 1.

A substation and other equipment is being installed by the Sewall Valley Coal Co. at Meadow Creek.

Louisville, Ky.

Big developments are coming fast in the eastern and southeastern coal districts of the state. Attention has lately been turned to the Clay, Ky., district, where a considerable acreage has changed hands recently. It is understood that the Peabody interests have purchased large holdings for future development, which will not come for several years, as the lands are off of the railroads and much developing will have to be done. The Frick interests of Pittsburgh are understood to have purchased additional holdings in the Harlan field, where improvements are expected to start at an early date.

In the Harlan field a number of new mines are getting ready for operation, including the Middleton Coal Co., which will start with about two cars a day; the Cambria Coal Co., two cars; the Harlan-Knox Coal Co., two cars; the Kitts Creek Coal Co., one to two cars. This concern is completing a tipple and will soon be ready to ship. The Clover Fork branch of the K. & V. R.R. will open about 12 mines, most of which will be three-to-four-car mines, and among which are the High Splint and High Point mines.

Development over in the Elkhorn district is going ahead at a rapid pace, and several big mines will be in operation shortly after the completion of the new spurs of the L. & N. Several of these mines will have a daily capacity of from 8 to 10 cars and running up to 20 cars a day, there being about 8 or 10 new companies getting ready.

PENNSYLVANIA

Anthracite

Wilkes-Barre—The 1917 annual report of Thomas J. Williams, mine inspector of the eleventh anthracite district, which includes the collieries in this city, shows that the year's production was 3,559,983 tons, of which 2,931,461 tons were shipped to market. David T. Davis, of the twelfth district, covering collieries in Plymouth, Larksville and Plymouth township, reports a total tonnage of 4,153,402 tons for the year, with 3,683,895 tons shipped to market. Both inspectors report a falling off in accidents in their districts, despite the great speed at which coal mining is being done in the Wyoming Valley.

Freeland—Within a short time extensive developments of mining will be under way. The recent acquisition of the Spring Brook operations by the Lehigh Valley Coal Co. in that section makes available two tracts of virgin coal held by the Coxe estate. These are fairly large beds, and combined with the robbing work that will be conducted in the Spring Brook operations will provide a large field for operation. Plans are also being considered at this time for draining the Old Silver Brook operations that have been filled with water for many years. The project is a most extensive one, however, and may have to wait the coming of more normal times before it is attempted.

Jeanesville— Work has been started on the sinking of a 600-ft. slope at the Spring Mountain colliery. The slope, while of comparatively short length, is of much importance to the development of the mine, as it will permit the tapping of two seams of virgin coal at that operation. The seams are the Lykens and the Buck Mountain. It is estimated that a large amount of coal can be obtained from this operation.

Shamokin—Several giant locomotives, built for the Atchison, Topeka & Santa Fe R. R., have been ordered by the Federal railroad administration for service in coal transportation on the Pennsylvania R. R. lines out of the anthracite region. The first of the engines was sent over the Shamokin division with a train of 75 empty coal cars, doing the work of two of the Pennsylvania engines in daily use.

Tamaqua—To encourage residents of the Panther Creek Valley to plant gardens, the Lehigh Coal and Navigation Co. has engaged Claude Deitrich, a graduate of Penn State College, as horticulturist, with headquarters at Lansford, and will lease all available plots at a nominal fee.

Trevorton—What is said to be one of the finest veins of coal in the middle western anthracite coal fields was cut recently at the Katherine colliery at Dunkelberger station, two miles west of Trevorton. The vein is the Lykens Valley No. 2, 10 ft. thick and reported to be of an unusually high quality. The new vein will increase the colliery output about 150 tons a day.

Scranton—Amicable adjustment of the equity proceedings of residents of Bromley Ave. against the Se-Rob Coal Co. was made in court on Mar. 14, following a hearing in which much testimony was taken. The agreement was approved by the court. Under it the company agrees to clear away all rubbish from the property; a concrete wall will be erected around the surface into the vein, supplanted by an iron rail; mining operations will be carried on under a plan indorsed by Engineers T. Ellsworth Davis, E. F. Blewitt, Harry Myers and W. C. Monroe. For every 28 ft. of coal taken out, 12 ft. of coal in pillars must be left. No coal will be taken through a surface opening. An opening will be made from a lower vein from the inside working and coal transferred through this second vein to the Oxford colliery of the Peoples Coal Company.

Danville—The first coal dredge to be floated on the Susquehanna River here this season was that owned by Charles Forney, who obtained 16 tons of buckwheat coal and three tons of stove coal. Nine dredges are located here. Indications are that many thousands of tons of anthracite will be taken from the Susquehanna between Harrisburg and Wilkes-Barre this year. Because of the high price of coal, dealers have offered an increase of 50 per cent. above last year's prices, and want the entire output of all dredges.

Bituminous

Du Bois—The Rhody & Maurer Coal Co., of Patton, has purchased the mines of the Tozier Coal Co. at Luthersburg, Penn., on the Buffalo, Rochester & Pittsburgh Railway.

Brookville—The Knoxdale Coal & Coke Co. is putting in a new operation known as Coder No. 5 on the L.E.F. & C. division of the New York Central R.R. in Clarion County. This company operates several mines of the Pittsburgh & Shawmut Railroad.

Punxsutawney—Jacob L. Fisher has purchased the entire stock of the Montgomery Mining Co. and will continue to operate the Montgomery mine on the Buffalo, Rochester & Pittsburgh Ry. near here.

Ford City—Three men were killed and four others escaped, one crawling on his hands and knees through dense smoke, when an explosion occurred in the Campbell mine, on March 16. The dead are Robert King, mine foreman, James Gould, and his son, Paul. The bodies of Gould and his son were recovered soon after the explosion by volunteer rescuers who braved the dangers of blackdamp and penetrated the wrecked section of the mine. The body of King was found 40 ft. from the mine entrance. He was just about to enter the mine with the pay for the miners when the force of the explosion caught him.

Knoxdale—A new operation has been begun here by the Green Valley Coal Co., with E. B. and F. B. Henderson, of Brockville, and B. E. Taylor, of Brockwayville, directors. Mr. Taylor will be general manager and general sales agent. The mine is located on the Pittsburgh & Shawmut R.R. and is putting out 250 tons a day, with prospect of 500 tons this season.

WEST VIRGINIA

Morgantown—Twenty cars a day for the use of operators in the Scott's Run coal region have been ordered by the New Haven R.R. for delivery to the Pennsylvania, and through them to the mines on Scott's Run. This important information was contained in a telegram received recently by Raymond Kerr, receiver of the Morgantown & Wheeling R.R., which serves the Scott's Run region. Contracts for the delivery of fuel to the New Haven have been held for some time by local operators, but until now they have been unable to secure the cars in which to make shipments. It would now appear that these cars will be supplied without further delay.

C. B. Bokey and son, R. L. Bokey, have leased a tract of 10 acres of Freeport coal from the Peninsula Coal Co. on Deckers Creek, opposite the Morgantown and Kingwood shops. A force of men is already at work and it is expected that three openings will be working soon. Coal will be run by a chute about 250 ft. to a large bin, from which it will be trucked to cars on the "Y" track. About 15 men will be employed.

Fairmont—The Kingmont mine, which has been operated by pick work exclusively, is to put in a mining machine, there being certain spots which it is almost impossible for miners to reach on account of the water.

Montgomery—During the heavy rainfall in this section last week the Cannelton Coal Co. suffered damages amounting to more than $25,000. The tipples of two or three operations on Smithers Creek were damaged heavily and four or five bridges of the branch line running up this creek were washed out. Mining operations on all other creeks in this vicinity also suffered heavy losses. Two coal tipples were washed out of Morris Creek, these being owned by the Kanawha Rail and River Coal Co.

KENTUCKY

Barbourville—Notice has been given of the dissolution of the Hughes Jellico Coal Co., which is winding up its corporate affairs. A. M. Decker and R. N. Cornett signed the notice as president and secretary.

The wagon-mine operators have been busy holding meetings at Barbourville and Corbin, Ky., this month, in order to file protests against the new Federal regulations which are said to be of a very drastic nature, and discriminatory. At Barbourville 50 wagon-mine operators recently organized the Knox County Wagon Mine Coal Operators' Association. W. B. Bailey was named president and an advisory committee of seven was named to take up with the Government authorities the status of the wagon mine, which it is claimed will be put out of business.

Madisonville — Basil Ramsey and James D. Overall have purchased the No Clipper Mine from B. C. Mitchell, Harper Gatton and T. E. Hibbs. The new owners will build a tram to the L. & N. tracks. The former owners have since purchased the Ed Best mine.

Work of rebuilding the power house of the Shamrock Mine, of the St. Bernard Mining Co., twelve miles from Madisonville, has started. This power house was dynamited a few days ago, and fire broke out following the explosion. The tipple and other equipment came through undamaged. The power house was valued at about $40,000, and the mine is probably the largest in western Kentucky. It ships about 150 cars of coal a week under normal conditions.

Somerset—The Bauer Cooperage Co., of Lawrenceburg, Ind., which owns considerable cut-over land at Bauer, Ky., near Somerset, is planning to open coal mines at that point and install a mining town to take care of about 500 men. Hugh Wright, manager of the company, was recently at Somerset, Ky., where he discussed plans for starting the work.

INDIANA

Terre Haute—Mine mules have been causing trouble in the mines in this vicinity. The drivers of the West Cleveland Mining Co. asked for a relay herd one day last week because the regular herd needed rest and treatment. Their legs had become infected from the mineral water in the mine. The management insisted upon the mules being continued at work and the drivers struck, throwing several hundred miners out of work. In another mine the men quit work because the mules were not groomed enough. In still another mine 1200 men were out three weeks because a driver was discharged for beating a mule with a scantling. The contention was that the mule was a hardened reprobate who had a long list of injured men to his discredit, and what would have been cruelty to another brute was nothing of the sort in his case. The men returned to work when the driver was reinstated.

ILLINOIS

Lincoln—Efforts to enlist capital for the reopening of the mine of the Lincoln Mining Co., shut down several months ago on account of fire, have been finally abandoned and the machinery and other removable property is being disposed of.

Virden — The Montour Coal Co.'s mine here has been ordered closed by the Macoupin County mine inspector until changes he deems necessary for the protection of the miners have been made. It is alleged that the owners have failed to provide adequate fire protection and refuge holes and that the ventilation is bad. Four miners were recently killed by an explosion in another Virden mine, which has resulted in more rigid inspection generally.

Carlinville—The Macoupin County Board of Supervisors met Tuesday, Mar. 12, and accepted the resignation of Samuel Dugan as county mine inspector. After a motion to refer the matter to the miners' union had been tabled, Alex Gray, of Staunton, was elected to succeed him. The other candidates were W. A. Dickerson, of Gillespie; H. C. Knoemoeller, of Staunton; Philip Davis, of Virden, and Edward Potter, of Virden.

Carlinville — Mine No. 3 in this community produced in 260 working days of last year 1,158,796 tons of coal. This is said to be the largest production of any mine in the state. The mine has a daily output of 4457 tons and employs 690 men.

Duquoin—George W. Dowell, former member of the Illinois state court of claims under Governor Edward F. Dunne, has disposed of his holdings in the Paradise and Franklin County Coal Co., of which he is the president, to the Northern States Coal and Mining Co. of Chicago. The mines are located in the Perry County field.

Pana—By an agreement of the operators of the four big mines operated here by the Pana, Penwell and Smith-Lohr companies with County Fuel Administrator Ernest Hoover, of Taylorville, the price at the mines until further notice will be $3 a ton for all grades except screenings and slack, which will continue to be $2.40 and $2.20 respectively. Heretofore the price of lump has been $3.45, nut $2.95 and pea $2.70.

Auburn—Auburn is experiencing a financial and industrial boom as the result of the opening of the new mine north of town. Many new houses are being built.

Springfield—The cases of six men, connected with Citizens' Mine A of the Citizens' Coal Co., charged with violating state mining laws, resulting in an explosion which killed four miners recently, have been continued for a week. The men under charges are Mine Manager John Scatterwood, Mine Superintendent Henry Martini, shotfirers John and William Flynn, and miners, I. Ward and Frank Ward.

Belleville—The Ellis & Richmer Coal Co., of St. Louis, purchased the old Oak Dale mine near here and is equipping it and putting it in shape for double its former tonnage during the month of April.

OHIO

New Petersburg—The Buckeye Coal and Railway Co., which owns a large acreage in this section, has opened a large store to serve the miners in this vicinity.

Personals

W. S. Blythe has resigned his position as general manager of the Coal Run Mining Co. and Tide Coal Mining Co., of Indiana, Penn.

Charles Boggess, of Charleston, W. Va., is making arrangements to operate a mine in the New River seam of coal in Webster County.

M. M. Townshend, formerly president of the Pool-Townshend Coal Co., has disposed of his interest in the company to C. E. Pool, of Charleston, W. Va.

Candus Schmid, mine examiner for the Lincoln Mining Co. before the closing of the property of that company, has taken a position at Shelbyville, Ill., as a mine examiner.

Proctor K. Malin, of Ashland, Ky., district counsel for the Kentucky Solvay Co., which has plants at Ashland, Portsmouth and Ironton, has been elected to the presidency of the company.

J. C. Messenger has been appointed superintendent of the Beryl mine of the Davis Coal & Coke Co. at Beryl, W. Va., succeeding William P. Beveridge, who resigned to go into business with his father.

George Evans, for 24 years with the Lincoln Mining Co., which company has suspended business, has taken a position as superintendent of the Latham Coal Mining Co., of Latham, Illinois.

Clarence W. Watson, of the Consolidation Coal Co., of Baltimore, Md., has been given a commission as colonel in the Army and detailed to the Quartermaster corps. Mr. Watson formerly represented West Virginia in the United States Senate.

Andrew Devers, of Port Griffith, Penn., has received from the Carnegie Hero Fund Commission at Pittsburgh a check for $500, half of the cash award granted for heroic conduct. Mr. Devers and six other men, including John Brown, now superintendent at No. 6 colliery of the Pennsylvania Coal Co., were each awarded a hero medal and $1000 in cash for their brave rescue of men who had become overcome or injured in an explosion at the Hoyt shaft on Jan. 10, 1911.

U. B. Williams, until two years ago general superintendent of the Baltimore & Ohio R.R., since that time located at Wheeling and previously at Grafton as division superintendent, has been named to represent the railroads in the Fairmont district, working with the district representative of the Fuel Administration. The plan is to have a railroad man working in every district with the coal man named as district representative. The selection of Mr. Williams is gratifying to coal men in the Fairmont district, who look upon him as well qualified and admirably fitted for the position in every respect.

John Ira Thomas, of Philipsburg, Penn., was appointed on Mar. 12, by Hon. Seward E. Button, Chief of the Department of Mines of Pennsylvania, as mine inspector, to succeed the late Elias Phillips, inspector of the Fourth Bituminous District. Mr. Thomas is 36 years of age, and was highly recommended for the position, having been connected with the bituminous coal industry practically all his life. For many years Mr. Thomas was employed as a mining engineer and then as superintendent in the Central Bituminous District. For the last two years Mr. Thomas has been employed as a mine inspector by the State Workmen's Compensation Board. About 25 years ago Mr. Thomas' father was mine inspector in practically the same district as will be covered by his son. Mr. Thomas will have headquarters in DuBois.

Obituary

William H. Holland, one of the pioneer operators of the New River field of West Virginia, died Mar. 15 at his home in Nuttallburg, aged 77 years. Mr. Holland came to this country from England when a young man, and opened up the Sewell seam of coal at Nuttallburg about the time that John McGuffin opened it up at Sewell. He lived for 50 years along New River at Nuttallburg, and was engaged in the mining and production of coal until the last few years. The mining fraternity has lost a good and faithful man in the death of Mr. Holland.

Industrial News

Cumberland, Md.—At a recent meeting of the Jaffy Coal Co., held at Cumberland, Charles H. Lantz was elected as president; Robert Grant, of Elk Garden, vice president, and W. R. Nethken, of Cumberland, as general manager.

Buffalo, N. Y.—George A. Corson, president of the Corson Byproduct Coal Corporation of Buffalo, with a new mine at Elkhorn City, Ky., has retired, and George J. Brendel, of Buffalo, succeeds him. Mr. Corson announces that he will organize another company and open new mines.

St. Louis, Mo.—Wallace Crossley, Missouri Fuel Administrator, has announced that next winter fuel distribution throughout the state will be directed by the State Administration at Jefferson City and that licenses will be issued solely by the Jefferson City office, instead of by local branch offices.

Cumberland, Md.—Stockholders and directors of the Deep Run Big Vein Coal Co., of Cumberland, have met and elected Noah H. Swayne, of Philadelphia, as president; W. B. Nethken, of Cumberland, as vice president and general manager, and Charles H. Lantz, of Piedmont, as secretary and treasurer.

Frankfort, Ky. — The legislature has passed bills providing for the reorganization of the Department of Mines and Mining, creating the office of Chief Mining Inspector with three assistants, and providing for five rescue stations to be located in the mining regions of the state. The new bill creates a department similar to those in the most advanced states.

Lexington, Ky.—The new Chesapeake & Ohio fuel forwarding bureau at Russell, Ky., is now operating under Federal direction. This bureau represents most of the large operators of eastern Kentucky, and is expected to prove of great aid in expediting movement of coal to the lake region this summer. Coal will be reconsigned at that point to prevent congestion.

Birmingham, Ala. — The Black Warrior Coal Co. has been organized and incorporated with a capital stock of $100,000. The personnel of the company is composed of experienced coal men in both the operating and selling branches. W. J. Penhallegen is president; W. B. Hillhouse, vice president and general manager, and D. H. Brown, secretary and treasurer.

New Petersburg, Ohio—Fred Essex, of Columbus, has leased from the Buckeye Coal and Railway Co. a tract of 365 acres of coal lands near New Petersburg, which will be developed by building a drift mine to have a capacity of 600 tons daily. The seam is No. 7, which is about 5½ ft. thick. The mine will be electrically equipped and will be ready for operation about July 1.

Middleport, Ohio—The Stalter-Essex Coal Co. has leased from the Buckeye Coal and Railway Co. a tract of 200 acres of No. 8 coal on the Kanawha & Michigan R.R. at Middleport, which is located in the Pomeroy Bend district. The work of developing the property will start at once, and a mine with a capacity of 1000 tons daily is planned. It will be electrically equipped.

Cincinnati, Ohio — Increased interest in transportation matters has caused a revival of the discussion of a lakes-to-river canal, of sufficient depth to accommodate large vessels. The old Miami & Erie Canal, which has been abandoned for some years, is the favorite route proposed by engineers and investigators, although it would require much deepening and widening to care for the kind of traffic proposed, 12 ft. being the depth indicated.

Birmingham, Ala.—The civic bodies of this city are endeavoring to secure the 1918 meeting of the American Mining Congress, conferences having been held in Washington with Secretary Callbreath, of the organization. Mr. Callbreath plans to visit Birmingham and attend the dinner to be given Henry Edmonds, editor of the "Manufacturer's Record," at an early date, at which time it is probable that final arrangements will be consummated for the meeting of the mining men here.

Louisville, Ky.—R. C. Tway, president of the James Coal Co., a retail organization, and the Tway Coal Co., a producing and jobbing organization, was indicted on 13 counts by the Federal Grand Jury on Mar. 15, the cases being continued until the October term of the Grand Jury. Tway was held under $1000 bond. The first two counts are on charges of failure to observe Government regulations relative to making reports, etc., the others being on overcharges.

Louisville, Ky.—The Louisville, Henderson & St. Louis Railroad Co., in an effort to facilitate shipping, switching and handling of coal, has placed an embargo on coal that does not carry complete instructions as to consignee and track upon which to be placed on arrival in Louisville from connecting lines at Owensboro and Henderson, and from mines on the company's line. Incomplete instructions have been responsible for much terminal congestion and loss of car mileage. The new arrangement will be a bit hard at the outset, but is expected to eventually improve conditions.

Cincinnati, Ohio—Kentucky stockholders of the Continental Coal Co. won a decision in the United States Circuit Court of Appeals when that court affirmed the ruling of the trial court enjoining Chattanooga interests from carrying out plans to turn the property of the company over to the Federal Coal Co., and appointing receivers to take charge of the property involved. The case was decided only 10 days after arguments were presented, showing great rapidity in reaching the decision. The court held that "the arbiter who gave the 'Chattanooga interests' the majority in the meeting of Sept. 15 was disqualified by interest, and that the proceedings of that meeting were incidental to a deliberate plan for overriding an essential provision of the reorganization agreement."

St. Louis, Mo.—Joseph W. Folk, general counsel of the St. Louis Chamber of Commerce, filed with the Interstate Commerce Commission at Washington, Wednesday, Mar. 20, a petition for the removal of the bridge arbitrary of 20c. a ton which is now charged by the St. Louis Terminal Railway Association for hauling Illinois coal across the Mississippi River to St. Louis. All the railroads constituting the Terminal Association are made defendants. He makes a plea that inasmuch as practically all of the coal for St. Louis comes from the inner group mines, ranging from 8 miles to 72 miles from St. Louis, and a blanket rate is applied to East St. Louis, a blanket rate should also be applied to the St. Louis industrial district. He contends that St. Louis and East St. Louis and the other eastside towns should be considered as one industrial district and receive the same rates on coal.

New York, N. Y.—The manufacturers of electric hoists in the United States have organized "The Electric Hoist Manufacturers Association," comprising the following companies: The Brown Hoisting Machinery Co.; Detroit Hoist and Machine Co.; Euclid Crane and Hoist Co.; The Franklin-Moore Co.; Link Belt Co.; Roeper Crane and Hoist Works; Shepard Electric Crane and Hoist Co.; Sprague Electric Works; The Yale & Towne Manufacturing Co. The association, membership in which is confined to those engaged in the manufacture of monorail electric hoists, holds monthly meetings for the purpose of studying the specific needs of the hoist user and to develop standardized methods of presenting information to him so that guesswork will be eliminated. The officers of the association are as follows: F. A. Hatch, chairman, Shepard Electric Crane and Hoist Co.; F. W. Hall, vice chairman, Sprague Electric Works; C. W. Beaver, secretary and treasurer, The Yale and Towne Manufacturing Co.

MARKET DEPARTMENT

Weekly Review

Conditions in Coal Market Generally Satisfactory—Domestic Demand Not So Keen as Expected—Rail Movement Again Slowing Up—No Contracting Reported

THE tone of the coal trade is generally satisfactory. With the moderating weather dealers are noticing a tendency toward an easier market. Domestic consumers are not so urgent regarding deliveries, though demand in all lines is still ahead of the supply. In face of the repeated urgings of the Fuel Administration that householders stock their next winter's coal early, the demand from this class of buyers is disappointing. This may be attributed to the fact that the public generally seems to feel that the price of coal will come down on April 1, and therefore hesitates to place orders at the old figure. Also, dealers do not seem anxious to force sales until some sort of assurance is had that they will receive sufficient coal to take care of a strong early demand, as the quantity of coal now in storage is not great.

The improvement in rail movement noticed for the past two weeks has failed to continue. The lines are again congested, and there has been an appreciable falling off in the number of cars supplied to the mines. Few operators report more than a 50 per cent. car supply, with the majority of shippers down to 25 per cent. and lower. This means that the country will be faced with an even more serious fuel shortage next winter, unless the Government takes immediate steps to rehabilitate the motive power on the railroads, whose disabled and inadequate equipment is mainly responsible for decreased production at present.

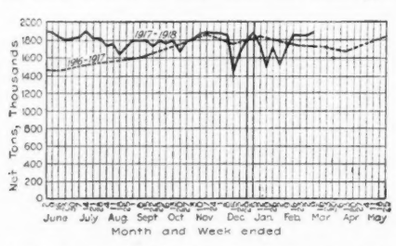
Consumers will likely have to pay more for their coal during the coming summer than they did the past winter, owing to the fact that the Interstate Commerce Commission has granted the railroads a freight-rate increase of 15 per cent. on bulk commodities, including coal. This increase, which will apply to all shipments east of the Mississippi River and north of the Ohio and Potomac Rivers, will mean an increase of from 18c. to 30c. a ton on the domestic sizes.

J. D. A. Morrow, National Fuel Distributor, has completed an arrangement with the operators producing smokeless coal in West Virginia that will stop the shipment of this high-grade fuel to Western markets and divert this coal to New England after April 1. This is an important move, as it will relieve an acute situation in a territory that is producing the maximum of war supplies. It will also greatly improve the fuel situation in New York and Pennsylvania, as the result of this action will be to lessen the demands on Pennsylvania mines from New England consumers. Curtailing shipments of smokeless coal to Western points will necessitate Cleveland, Cincinnati, Toledo, Detroit, Chicago, Indianapolis and other cities burning the lower grade Central West coals. The West will have to endure smoke in all its cities for the present. A second and no less important result of this new order will be to provide plenty of smokeless coal for transports and naval vessels. This will go a long way toward combating the German U-boat peril. In addition, it is true that with this high-grade steam coal a vessel will travel 16 knots an hour, as compared with a speed of only 12 knots an hour when using a lower grade fuel.

No information is yet available regarding contracts. While quite a heavy contract tonnage will expire within the next week or two, there is no activity on the part of the mines to renew contracts until the announcement is made by the Fuel Administration of new regulations, prices, zoning, etc., which is expected at any moment. The Administration has already made public its plan for licensing jobbers. Instead of eliminating the jobber's commission, the authorities have assured him a reasonable compensation for his services, while at the same time preventing improper practices. The commissions to be allowed are briefly: 15c. on bituminous; 20c. on anthracite in the East and 30c. in the West, and 5 per cent. of the delivered price on smithing coal.

COAL PRODUCTION

Last week's output of soft coal was the largest since Nov. 24. The total bituminous production during the week ended Mar. 9 (including lignite and coal made into coke) is estimated at 11,228,000 net tons. The daily average for the week (1,871,000 tons) was exceeded in the week of Jan. 5, but at that time the total production was reduced by the New Year holiday. The improvement has been made possible by relief of the railroad freight congestion. Anthracite and coke, both beehive and byproduct, reflected the increase in bituminous production.



Preliminary estimates based on railroad shipments place the week's production of beehive coke at 633,000 net tons, or 106,000 tons per working day. Connellsville production, as reported by the "Courier," increased from 285,828 tons during the preceding week, to 314,409 tons.

Anthracite shipments rose to 42,207 cars, the largest since the week of Dec. 1.

For the country as a whole, the ratio of tonnage produced to full-time capacity, during the week ended Mar. 2, was 70.9 per cent. Shortage of cars remained the dominant factor limiting production; losses attributed to that cause amounted to 20.8 per cent. of capacity.

A general improvement in working conditions was reported from Illinois, east to Pennsylvania, and south to Alabama. In Illinois, Ohio, and throughout Pennsylvania, the improvement was effected by the reduction in losses due to car shortage. The only districts in the Appalachian region to report more acute car shortage were the Panhandle, New River, and Pocahontas fields of West Virginia. From the Fairmont district and the high-volatile fields of southern West Virginia, a marked improvement in transportation was reported. In both districts, however, production is still far short of capacity; the Fairmont field operated to 49.3 per cent., and the high-volatile field to 58.2 per cent. of capacity.

The lack of demand from the Southwest and Mountain States was more noticeable during the week of Mar. 2. Thirty-nine operators, representing 53 mines in Iowa, Kansas, Arkansas, Oklahoma, Colorado, Utah, Montana and Washington, lost 100,752 tons because of "no market." The absence of demand was most severe in Utah, where it caused a loss of 40,699 tons. The tonnage sacrificed in Washington was small.

An improved car supply and increased activity in movement by river caused beehive-coke production in the Connellsville and adjacent regions to reach the highest point attained since November. Sixty-one of the principal operators in the Connellsville, Greensburg and Latrobe districts reported a production of 255,325 net tons during the week ended Mar. 9, or 60.8 per cent. of their full-time capacity as reported by the railroads. Losses due to shortage of coke cars fell from 32.8 per cent. of capacity, during the preceding week, to 27.4 per cent. Losses due to shortage of yard labor were reported at 6.4 per cent. An increased supply of coal cars enabled the same operators to ship 168,050 tons of coal.

TABLE II. CARLOADS OF COAL AND COKE ORIGINATING ON PRINCIPAL COAL-CARRYING ROADS

	Week Ended: Feb. 16	Feb. 23	Mar. 2	Mar. 9
Bituminous shipments, 121 roads..	189,984	189,691	197,415*	199,582†
Anthracite shipments, 9 roads...	40,661	36,612	39,875*	42,207†
Beehive coke shipments, 4 roads...	11,357	11,634	12,911*	12,990†

* Revised from last report. † Subject to revision.

BUSINESS OPINIONS

Marshall Field & Company—The current wholesale distribution of dry goods is greatly ahead of the heavy volume of the corresponding period a year ago. The volume of road sales for both immediate and future deliveries is much larger than in the same week of 1917. Customers have been in the market in greater numbers. The market on domestic cotton continues strong. Collections are excellent.

Dry Goods Economist—Conditions in the dry goods field are improving; the railroad congestion is daily becoming less and the movement of needed merchandise is thereby being expedited. While there is still room for improvement, the situation promises to become easier week by week.

The Iron Age—Steel production with some companies has made a considerable stride forward in the past week, Steel Corporation plants apparently coming closer to normal capacity than the majority of independent producers. A 10 per cent. increase over the February rate represents the average condition. The situation as to cars and motive power is still a serious one and promises to continue so. On the score of securing the largest possible output of pig iron and steel from the available coke, current priority decisions tend more and more to throw smaller iron and steel plants into idleness, and the development of this policy is being watched closely throughout the industry.

Atlantic Seaboard

BOSTON

Uncertainty over program the leading feature of present situation. Rail movement good, but outlook for water coal not so reassuring. If bottoms now in coastwise service are taken away it will be a question of which industries are to be supplied. All kinds of plants including utilities on a hand-to-mouth basis for the present. Boston "L" among those forced to rely upon emergency coal. Shippers cooperate. More or less frantic efforts on part of buyers fail to get results in form of contracts. Much anxiety to be "in line" when word is given. Developments as to status of "jobbers." Because of scarcity of vessels loading dispatch at Norfolk is about normal. Dumpings less than normal. Anthracite outlook also uncertain, and trade awaits definite announcement.

Bituminous—The larger industrials within 50 miles of tidewater continue to rely upon high-priced emergency coal brought here from Hampton Roads on $3.25 freights, the United States Shipping Board rate, and about a week's supply continues to be handed out in each case. The present week the receipts will be less, and it is possible the needs of some mills will be acute enough to cause shutdowns. There is, of course, a considerable tonnage coming forward in customary channels, but on account of steamers being under control of the Shipping Board and therefore subject to assignment by trip, it is difficult for shippers to carry out plans for distribution.

At the same time that New England is kept on the ragged edge of coal famine, about every buyer in the territory is looking most eagerly for signs of anything that looks like "contract." Acting on the advice of the New England Fuel Administrator, all have been trying to effect season arrangements with regular sources of supply, but so far as reported the efforts have been without result, save in a few small insignificant cases. With "zoning" and "assigned cars" still matters of undefined policy, and an uncertainty even as to railroad fuel, it is easy to see why operators are coy of making contracts. With prices, rehandling conditions, and pretty much every other factor still a matter of conference at Washington, history will have to be made fast the next ten days if the trade is to be straightened out for the first few months of next season. The producers are, of course, satisfied so long as demand exceeds supply. A remunerative price being granted it is really a matter of indifference on their part where coal goes, except that the more cars are placed for points near the mines the better will be the general car supply for the district.

A few informal arrangements have been entered into, it is understood, on water coal, but the conditions of sale are so closely bound up with all manner of contingencies that the net result is a matter of good will on the part of the producer. The Government fixes prices and the producer practically decides whether requirements are important enough to justify shipment. The system of deputy distributors, one for each mining region, is likely to continue for the present. The question of additional personnel to supervise preparation, for instance, seems still undetermined.

On water coal, since the need is for bottoms rather than coal, several of the agencies have begun to load certain ships that are at the disposal of the shipping board. The understanding is that while the shippers are likely now to furnish more and more of the coal that is dumped at Hampton Roads for New England the distribution and out-turn of the cargoes will continue to rest in the hands of the fuel authorities. Gradually the disposition of the ships assigned for the coastwise service is also being vested in the New England Fuel Administration and the whole system of distribution will have to be wisely administered in order to accumulate any reserve whatever by the time cold weather returns. Current receipts either by rail or by water are not so encouraging as might seem. Every time a "new ship" is transferred to the coastwise trade the fact is made prominent in the newspapers, but little or nothing is said when another hand of the Government takes one away.

Just now there is plenty of coal at Hampton Roads for the vessels in line. For a fortnight or so the arrivals for different sales agencies have been relatively small, and the coal to their credit has accumulated while the loadings were largely for account of the Navy, the Army, the Shipping Board, or some other Government service.

Anthracite—Rail deliveries so far have averaged better than in March, 1917. By water routes, however, the falling off is marked. There is much interest in the first probable announcement by the anthracite committee. The impression seems to be gaining ground that preference in the spring is to be given the far-away places, up the rivers, and at such points as are less accessible by rail. If such a program is followed there will be less real hardship, for barges and other transportation would be confined in colder weather to service that would require shorter trips. The new ruling as to jobbers seems to have created very little stir. So far as anthracite is concerned, it was pretty well discounted, for it was felt that in distribution the reputable middle houses were performing a service that could readily be justified.

NEW YORK

Anthracite supplies low while demand remains strong. Jobbers discuss Dr. Garfield's announcement of licenses, but await official copy. National Jobbers Association meet in this city. Consumption lighter and dealers have an opportunity to obtain surplus. Bituminous producers anxious for more cars. Local situation not much improved. Supplies low. Bunkering situation much better.

Anthracite—Supplies in this market continue to remain low, and early this week were judged by many to be as small as at any time during the past few months. Conditions, however, showed improvement, as the retail demand has subsided. While dealers were as anxious as ever to get coal, they were not under pressure to make deliveries. As a result most retail dealers are enabled for the first time in many weeks to boast of having a small surplus in their yards.

The uppermost topic of interest in the trade was the announcement of Dr. Garfield regarding the licensing of jobbers. No one was willing to discuss the new regulations pending the receipt here of an official copy, but it is not believed that the tradesmen affected are entirely satisfied. However, they are willing to live up to the rulings of the Federal Fuel Administrator.

The conferences between representatives of the Federal Fuel Administration forces in Washington and the Fuel Administrators of Greater New York, at which plans for distribution and the coal requirements of the Greater City for the coming year were discussed, have ended, and the data have been submitted to Dr. Garfield. The proposition of creating a reserve supply of about 500,000 tons for this city does not meet with the approval of the entire trade, inasmuch as the storage facilities are extremely limited and there would be extra charges for reloading the coal for delivery.

With the weather moderating dealers are noticing a tendency toward an easier market. Consumers are not as urgent regarding deliveries and instead of insisting upon deliveries of at least one ton, they are willing to take half and sometimes quarter ton deliveries. Many orders have already been placed for next winter's supply, but there is no apparent hurry for deliveries to begin, consumers appearing anxious to await better preparation. Complaints of dirty coal are diminishing and dealers believe that the worst is over now that the Federal inspectors are on the job at the mines.

The fact that production is steady does not increase stocks at the Tidewater piers. Everything coming to this market is sold before it leaves the mines, and spot coal buyers are having difficulty in picking up a stray cargo.

Several of the city departments have been authorized by the Board of Aldermen to buy a three months' supply of coal in the open market.

The small anthracite sizes continue to be scarce. Buckwheat No. 1 is practically out of supply, and nothing is heard concerning the making of contracts. Rice and barley are scare, but freer than the larger size. Screenings are in strong demand but not plentiful.

Current quotations, per gross ton, f.o.b. Tidewater, at the lower ports are as follows:

	Circular	Individual
Broken	$6.30	$7.05
Egg	6.20	6.95
Stove	6.45	7.20
Chestnut	6.55	7.30
Pea	5.05	5.80
Buckwheat	4.30@5.00	5.50@5.80
Rice	3.75@3.95	4.50@4.80
Barley	3.25@3.50	4.00@4.25
Boiler	3.50@3.75	.....

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—Many local producers and jobbers were at Altoona on Tuesday of this week attending an important conference at which the coal situation was discussed and where it was hoped plans would be formulated for the betterment of the existing conditions.

Locally conditions do not show much improvement. Supplies are short and nearly everything sent to this market is sold before shipment.

While efforts have been made to improve the car supply very little success has been attained. Complaints continue numerous. Operators are unable to increase production and the miners are disgruntled because they cannot work as steady as they would like.

The Wholesale Coal Trade Association of this city in a bulletin to its members estimates that the approximate price alongside in the harbor limits for bunker coal, based on present mine prices and expenses of handling, is $7.533 per gross ton.

The bunker coal situation here is in better shape than it usually is at this season, and the reserve for bunkering of transports is such that orders were given to hold off on shipments for two weeks.

Improvement in the inland coal situation is looked for now that the order diverting practically all eastern shipments from the Pocahontas and New River fields to Tidewater has been canceled. The Tidewater requirements having been met, the low volatile coals from these fields will go a long way toward relieving the situation in other sections of the country.

PHILADELPHIA

Anthracite trade full of uncertainties. Not sure now about April price. Individuals' price, subject of discussion. Freight-rate increase complicates matters. Current retail demand light, but dealers take all coal shipped. Early ordering campaign being waged. Commission men licensed. Bituminous trade stirred by price agitation. Somerset price increased. Rail situation not so good. Car supply fair to poor. No zoning yet. Brokers win their fight.

Anthracite—Uncertainty at this time rules the coal trade, especially among the retailers. The shippers have been unable as yet to assure the dealers that they will receive ample supplies of coal after Apr. 1; neither have they been advised by the Federal Fuel Administration as to the margin of profit to be allowed. In the meanwhile dealers with large storage capacities are glad to accept all the coal they can secure, but the small dealers with limited bin room have in numerous cases been compelled to cancel orders for certain sizes. The retailers who deal largely in independent coal are in a particular quandary. If the smaller operators are to be allowed to charge 75c. above the company circular the dealers feel they should know it now. They seem to be in dread of the possibility of being stocked up at the high

rate when the Government may step in and reduce the differential. They point out that they are putting themselves in the position of going into April with coal costing them about $1 a ton more than the April shipments received by company customers. Yet they hesitate to cancel their orders for March for fear shipments will not be resumed the same as if they had not been interrupted.

As to the retail demand, it can be said that during the last weeks of the month the sales have been a disappointment. In the suburban sections where the buyers are more affluent there is some activity, but the dealers who serve the more humble homes are actually complaining. It is the dealers caring for this trade who express some doubt as to whether their customers will place their orders this spring. They will refuse to deliver on credit and are afraid many small buyers will not display sufficient thrift to buy so far in advance. It is this class who for years have been willing to take a chance and who always pay the top prices.

Shipments to this city have been far from free, but the demand has been correspondingly light. Pea coal is scarce, as there seems to be the usual March demand for it. Chestnut is quite active, if only because it is being extensively bought as a substitute for pea. Egg and stove are very draggy, except in the suburbs. On account of this somewhat sluggish demand for deliveries the fuel committee revised its order not to allow dealers to book summer orders before Apr. 1 and changed it to Mar. 20. On that date the new form to be filled out by the customer will be ready. This is an elaborate statement of the consumer's needs, and to meet the cost of administration in connection with the recording of the applications a 2c. stamp has been devised to be placed on each order at the cost of the retailer. Even with the advancing of the date for receiving orders there seems to be no general disposition on the part of the dealers to encourage ordering on account of the uncertainties stated above.

A ruling that has been handed down by the National Administration and that is particularly pleasing to the retail dealers is the one forbidding the practice of selling carloads of coal direct to the domestic consumer. Operators throughout the state have received instructions from State Administrator Potter prohibiting the shipment of coal directly to the consumer. The purpose is to prevent persons of influence from ordering direct from the mines and thus escaping the system of checks and reports predicated on the assumption that coal will go to the consumer by way of the retailer. The practice was greatly abused all last summer and the dealers welcome the opportunity they will now have of serving this trade in the regular manner. It is understood that the Fuel Administration will permit the continuance of the practice of employees of coal-producing companies to purchase their supplies in this manner, which has been the practice for many years, but all such shipments will be subject to the approval of the local fuel committees of the towns to which the coal is consigned.

No information as to contracts is as yet obtainable. There are some in the trade who express the opinion that few, if any, will be made by the shippers. This seems plausible, especially when it is recalled that no contracts will be permitted except subject to the approval of the National Fuel Administration.

The anthracite brokers seemed entirely satisfied with the order of the Fuel Administration which provides for their doing business under a license system. The rule also carries with it a commission of 20c. added to the mines price of the coal. From this it would appear that there would be at least one variation from a fixed mine price for all shippers.

The prices per gross ton f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for tide are as follows:

	Line	Tide		Line	Tide
Broken	$5.90	$6.05	Buckwheat	$3.15	$3.75
Egg	4.80	6.00	Rice	2.65	3.65
Stove	5.05	6.35	Boiler	2.45	3.55
Nut	5.15	6.40	Barley	2.15	2.40
Pea	3.75	4.65			

Bituminous—Local producers have been greatly stirred by the agitation—and they feel convinced that agitators are behind the movement—to secure a reduction of the present price of $3.05 for coal at the mines. It has been intimated that an effort is being made to have the Fuel Administration issue reduced prices beginning with Apr. 1, and that the matter is being given consideration.

As to the general situation, it must be said that the rail improvement as noted last week has failed to continue during the succeeding period, as the lines are now considerably congested, and there has been a considerable falling off in the car supply at most mines. No mine has reported more than a 50 per cent. supply, with most shippers down to 25 per cent. or lower. Despite this the general feeling is one of optimism, and with a continuance of favorable weather conditions it is thought that the next fortnight at least will show much improvement.

BALTIMORE

Better supply of soft coal reaching this territory and even more relief when rail congestion near here is broken. Jobbers and retail dealers preparing to meet new conditions after Apr. 1.

Bituminous — The fuel administrator's office here reports better receipts of soft coal both for tide loading and local business. The shortage in industrial circles, however, has been such that it will take some time to catch up, even in part, and meanwhile the coal arriving is still being apportioned to the most needy cases. Serious congestion exists on the railroads between this point and the mines, however, and there has been much confusion on reconsignment of coal refused at connecting roads because of embargoes. At Brunswick, for instance, at the start of this week there was a jam of over 2500 loaded freight cars, much of it coal, and nearly 1000 of these cars were marked for delivery at the piers here. When this coal gets running the situation will be much relieved both at this point and at the mines, which are unable to get empties or to get laden cars away from sidings in many cases. The soft coal jobbers here, while not entirely satisfied with the readjustment of the order from Washington relating to their commissions, etc., are much elated at the modification of the first drastic ruling. Many are now making contractural relations with firms here under the new management. It will take some time of practical working before it can be said just how far the ruling is to hit the jobbing business.

Anthracite — Almost springlike weather here has caused a sharp drop in the demand for hard coal for domestic consumption. The trade is not expecting much of a demand now until after the new schedule is arranged for sales after Apr. 1. Most of the dealers, if able to get any quantity of coal in the spring and early summer, will urge their customers not to delay laying in supplies.

Lake Markets

PITTSBURGH

Market supplies still light but increasing. Car movement better. Some jobbers well pleased with proposed new license system for jobbers.

Supplies of coal in the open market have been increasing slowly and are still quite small, but progress is being made and large consumers continue to be well supplied, as they have been in the main for three or four weeks past. The Monongahela River mines have aided greatly in improving the situation in the immediate Pittsburgh district. In the past few days mines in the lower pools have been practically idle on account of high water, approaching a flood. There is no disposition to complain, however, as it is really remarkable how the weather has conduced to a free running out of the enormous accumulation of water.

Car supplies at rail mines continue to increase, but the increase is slow and at some mines is hardly noticeable from one week to the next. The improvement thus far is attributed chiefly to quicker movement of cars. Not much seems to have come thus far of the recently predicted influx of cars into the district released from the eastern congestion. Reports are that the number of cars tied up in the East is still very large.

The older and larger coal jobbers express themselves as rather well satisfied with the new system of control for jobbers being developed at Washington, as far at least as the plan has been outlined thus far. All jobbers are to be licensed, and they are given two methods of conducting transactions, only one to be used in a given case. The first is to buy and sell outright, in neither case at above the set price for the operators; but they can make as large a margin as circumstances permit by buying at under the set limit. The second is to act as buying agent for a consumer or retail dealers, in which case a brokerage up to 15c. can be charged as formerly beyond the set limit. This system, many jobbers feel, will give them a better opportunity to conduct business than they have had heretofore. While some doubts are entertained as to whether it will be possible to buy much coal at under the Government limit, there are some jobbers who expect to do so at certain times in the year. All the details of the plan have not been given out as yet. The length of time a jobber may hold coal in his own name may be limited, but thus far it is not known positively that it will be.

The market continues to be quotable as formerly: Slack, $2.20; mine-run, $2.45; screened, $2.70, per net ton at mine, Pittsburgh district, with 15c. extra permitted to be charged in sales by jobbers to consumers. These prices run only to the end of the month and the new prices and trading conditions will be announced not later than the end of next week.

TORONTO

Conditions improving, but supply unequal to demand. Local deliveries still much in arrears. City has given up taking orders. Anthracite increased in price.

Conditions have been gradually improving, but owing to the continuance of severe weather the demand is much greater than usual at this season. Shipments are coming forward well and dealers are taking orders, though owing to arrears, which have to be overtaken, local deliveries are much delayed and many customers can only obtain small lots. The pressure has so far lessened that the city has ceased supplying coal to necessitous cases, having since Jan. 1 filled about 8000 orders. The price of anthracite has advanced 15c. per ton, otherwise prices are unchanged. Quotations per short ton for best grades are: Retail anthracite, egg, stove, nut and grate, $10; pea, $9; bituminous steam, $9; slack, $8 to $8.50; domestic lump, $10; cannel, $11, wholesale f.o.b. cars at destination; three-quarter lump, $7 to $7.50; slack, $6.85 to $7.

BUFFALO

Not much bituminous improvement. Jobbers hoping and doubting. Car supply not much improved. Anthracite in fair supply. None for the lakes right away.

Bituminous—The situation has steadily, though slowly, improved so that the consumer is at least getting what he needs from week to week, though he would not be able to put any in storage. As the end of the annual contracting season approaches the trade becomes more and more anxious over the outcome.

Cars are hardly more plentiful than formerly. The Pennsylvania R.R. has shown substantial improvement, sometimes delivering the cars to destination, even at Canadian points, before the weights were received, but the Buffalo & Pittsburgh, New York Central and Erie are not making good deliveries. The Erie is so badly blocked at Hornell that it refuses to take coal for shipment past there.

Anthracite—There is complaint of bad assortment of sizes now, more than of a general shortage. Egg and stove have not been in proportionate supply for a week or more, but distributors report that they have had a fair supply as a whole. The orders for next winter's coal are coming in fast, but shipping agents have had no instructions as yet and do not know what the price is to be. If the proposed 30c. reduction is met by 30c. freight advance, the consumer will get small relief and the producer will pay the amount to the roads.

The lake fleet is fitting out and will be ready to sail in a few days, but the chances are that no coal will be ready here for them to load. The shipping companies state that it will not be possible to get any for that trade awhile yet. As the upper lakes are said to be better supplied with anthracite than we are and have a surplus of bituminous, there need be no hurry in one sense, though it may not be easy to move a sufficient amount for next winter unless the shipments begin before the season is far advanced. The down freight offering is large, so the fleet will have to go after it and not wait for coal cargoes.

DETROIT

Interest of domestic buyers fluctuates with weather changes. Steam trade demand active. Early lake movement predicted.

Bituminous—Changes in temperature now appear to be the controlling factor in buy-

ing for household use. Frosty weather early in the week stimulated a demand among domestic consumers, who had been husbanding short supplies in the hope temperature conditions might moderate to an extent that would enable them to avoid further purchases at this time. The duration of the cold weather was so brief, however, that the renewed demand was short-lived and was not to any noticeable extent carried beyond retail dealers.

Demand for steam coal from manufacturing and industrial plants continues active, and it is observed by some of the jobbers that this class of consumers appear willing to accept fine coal and lump, without demanding three-quarter lump, egg and other sizes that were popular a year ago. The incoming shipments include a smaller proportion of the sizes requiring special preparation, than was the case formerly.

Supply is being maintained in fair volume, though the receipts are not sufficient to leave any free coal on tracks. Most of the stock comes from mines in Ohio and West Virginia fields, and smokeless coal is conspicuous by its scarcity.

Wholesalers are advising their customers to make a start if possible in putting in a reserve supply, arguing that conditions at present are likely to be more favorable than after the reopening of lake navigation early next month.

Anthracite—Little increase in volume of anthracite receipts is apparent. The quantity received seems little more than sufficient to meet current requirements of household consumers, which are widened by the scarcity of coke.

Lake Trade—Shippers handling coal over lake routes are planning to start the business early. It was decided at a conference in Cleveland, a few days ago, to continue handling shipments through the Lake Erie coal pool. Some modifications may be made in the system in use last season. Little inquiry for vessel capacity has so far appeared. Removal from the lakes to the Atlantic of a great number of the smaller type of bulk freighters is expected to increase the difficulty of shipment to small docks.

COLUMBUS

The warm weather has lessened domestic demand appreciably. Steam business is exceedingly strong and preparations are being made for a heavy lake trade.

The coal trade in Ohio continues strong in practically every department. Buying for steam consumption is one of the most important factors of the trade, but there is also heavy buying on the part of retailers. The urging of the Federal Fuel Administration is having its effect on private users, and a larger number are accumulating their coal for the coming winter. On the whole the tone of the market is generally satisfactory and prospects for the future are considered good.

Manufacturing plants are taking advantage of the lull in domestic buying to secure a surplus stock, and many have succeeded beyond their expectations. Other users of steam grades are not buying for the future, trusting to improved transportation facilities to supply the fuel when needed.

The domestic trade is running along smoothly in every respect. Dealers are buying rather heavily, as they want to be in a position to take care of customers who desire stocks for the coming winter. Storage space is being provided and dealers are buying in larger quantities than formerly at this time of the year. There is a strong demand for the fancy grades such as Pocahontas and West Virginia splints, and little of the former is coming into the local market. West Virginia grades are arriving in larger quantities. Retail prices are strong at the levels which have maintained for some time. Domestic coke is expected to advance soon. Anthracite is quite scarce and sells around $10.

Production is fairly good in most of the mining districts of the state. This is especially true of the Hocking Valley and Pomeroy Bend sections. Car supply is fairly good and as a result the output is estimated at 85 per cent. Eastern Ohio is still hampered by car shortage, and the output is about 65 per cent. High water in certain sections of the Hocking Valley is causing idleness among mines.

Prices on short tons f.o.b. mines are as follows:

	Hocking	Pomeroy	Eastern Ohio
Sized grades	$2.70	$3.05	$2.70
Mine-run	2.45	2.80	2.45
Screenings	2.20	2.45	2.20

CINCINNATI

The trade is busy making arrangement for supplying storage demand as well as taking care of immediate consumption. Conditions are improving.

With the entire public—domestic and industrial consumers alike—keenly alive to the necessity of making provision well in advance for the coal supply for next winter, the coal trade will have no difficulty in keeping things moving during the summer. Indications now are that the trouble will be the other way around—that is, to get coal enough to take care of the constant demand. There is now enough regular demand from retailers and jobbers to take care of all of the coal forwarded. If this condition continues, the city will enter next fall in the best condition in its history. Just now, however, consumers are to be strictly limited in their purchases. The unusual spectacle will be witnessed of enforced limitation of orders during the season when the trade is normally unable to secure enough business to keep its facilities employed. Domestic consumers are being required to sign statements showing what their requirements are (as measured by last season's consumption) and what coal they have on hand, and to confine their orders to the difference.

LOUISVILLE

Situation steadily improving, with much better movement from both eastern and western Kentucky fields. Car supply somewhat better. Demand fair for steam and domestic use.

The retail demand has been rather light, fluctuating with the weather, which is unsteady. The steam demand is showing little change, however. The western Kentucky movement is steady and good, the fair supply of cars being received in that section enabling the mines to operate on a five-day average basis. Local retailers have not been making any effort to sell coal and have been busy stocking their yards, with the result that there is a ten-day to two-week supply on hand with most of the local concerns. The car supply in eastern Kentucky is somewhat more encouraging than it was, and a better movement is being shown. The demand for eastern Kentucky coal is strong.

The prinicpal interest in the market at this time is in connection with the Fuel Administration's setting prices at which summer stocking will start, and for contract making. It is believed that if the price is set before Apr. 1, that the heaviest bookings on record will be made, as there appears to be a general movement toward early stocking this season and many inquiries are coming in.

BIRMINGHAM

Domestic buying in abeyance awaiting new price adjustments and regulations. Steam demand continues unabated. Production improves some, but supply is still far from adequate to requirements.

Both domestic dealers and producers are anxiously awaiting the adjustment in prices and changes in classification which are being worked out by the Fuel Administration in Washington, with the advice and assistance of coal men from this district. Therefore the movement of domestic coal is light, there being sufficient stocks in the yards of retailers to supply all current demands. Dealers, however, are desirous of placing contracts for their 1918-19 requirements, and when the regulations and prices are announced by the Fuel Administration a strong buying movement is expected.

The steam trade is strong and susceptible of little change, there being a demand for a much larger tonnage than can be produced under existing operating conditions, and any changes made in price schedules would hardly affect the market, or the output either (barring any drastic reductions). The wide margin between supply and requirements will maintain a heavy demand for some time to come.

Coal production in the district is improving slightly each week, and is expected to shortly reach the normal status which prevailed prior to the interruptions caused by strike troubles several weeks ago.

Coke

CONNELLSVILLE

Coke movement continues to improve. Furnaces better supplied and may be fully supplied shortly. Foundry coke remains extremely scarce. No brokerage allowance contemplated.

Last week's coke movement showed an improvement on the whole, but the week did not end nearly as well as was presaged by conditions in the first two or three days, when, as noted in the last report, there was the largest car supply since October as well as the largest increase from one week to the next. While the Monongahela R.R. Monday of last week had an 80 per cent. car supply, its average for the whole week was only 46 per cent., which would be equivalent to 80 per cent. one day and a daily average of 49 per cent. for the remaining five days. This week opened with 60 per cent. on Monday and 80 per cent. on Tuesday. Supplies elsewhere in the region improved last week and again this week. Shipments may be estimated at fully 350,000 tons last week and somewhat more this week, whereas in the first nine weeks of this year not a week showed 300,000 tons, and the average was only 267,000 tons.

Shipments are now nearly equal to the requirements of the blast furnaces, depending on the region, but the furnaces have not all received coke, as yet, at the increased rate as it takes a week and more for shipments to get through to the average furnace. In the past ten days furnaces have been operating at fully 80 per cent. of capacity, and if the improvement in conditions continues they will soon be operating at 100 per cent. The steel mills, however, are not in position to ship finished product in proportion to increased supply of pig iron, by reason of car shortage and embargoes, and it looks as if pig iron might accumulate to an extent, after having been extremely scarce for a twelvemonth.

Offerings of furnace coke in the open market have not increased much, except that usually some coke loaded in P. & L. E. cars can be had without much difficulty, for the limited number of consumers that can take such delivery. Foundry coke continues extremely scarce and few enquirers get what they want. The market remains quotable at $6 for furnace, $7 for foundry, 72-hour selected, and $7.30 for crushed, over 1-in., per net ton at ovens. There is no allowance for brokerage to be charged to consumers above the set price, and the new regulations, while continuing in modified form the allowance to brokers in coal, will not allow anything in the case of coke.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Mar. 9 at 314,409 tons, an increase of 28,581 tons, and shipments at 334,584 tons, an increase of 37,350 tons.

Buffalo—The supply is called short, but it seems to hold out. Jobbers are so out of this trade that no information is to be had of them. They dropped coke in the days before the high prices, when the consumer was finding so much fault that it was impossible to satisfy him. High prices seem to have stopped complaints. The sale of byproduct coke is brisk, many jobbers being in it. The price is from $2 a ton at the place of production, so the quality is not likely to be high. It practically all goes as a substitute for bituminous coal, so the old complaints do not apply to it.

Middle Western

GENERAL REVIEW

All efforts of operators to increase output held in check by failure of railroads to increase equipment supply.

Weather conditions for the past week were such that mines might have materially increased output had the railroads been able to provide sufficient cars to keep the mines in operation. The only mines that have received 100 per cent. car supply were those with railroad fuel contracts. Others have had to be content with a maximum of 65 per cent. supply, and in many instances running time fell far below this per cent. Many large mines with two and three lines of roads have only worked three and a half days the week just past.

Warmer weather has relieved market tension. The retail trade, although it has not altogether discontinued to take some tonnage, seems to be taking things easy and waiting for developments. One of the puzzling problems is the uncertainty of eastern coal. Dr. Garfield is continuing for an indefinite period the diversion of West Virginia smokeless to the use of tidewater vessels in the United States service, thus rendering doubtful the prospects of a normal supply of this grade in the Western market.

News of the Fuel Administration's clean-coal policy has caused more or less speculation. Many small operators say they

have no facilities for the installation of picking tables and will have to depend on inspection being made on shaking screens or at the bottom of pit and at the coal face.

Scattered throughout the country are many strip and slope mines. These produce a small tonnage which has heretofore been sold as mine-run. These operations possess no screens of any character and will be compelled to depend entirely on underground or face inspection.

The situation with reference to Pocahontas seems to be rather confusing. Some dealers affirm they are getting more of this grade at this time than they did for the corresponding period last year, other dealers in the same locality stating that they are getting none, and that their yards are without any eastern coal. No doubt this difference is due not so much to an actual shortage, but to long established trade relations. During the past week Hocking seems to be more plentiful than for some time, due to easier conditions in Michigan and Ohio.

CHICAGO

Contemplated price change causes light buying. Chicago easy on all grades of western coal.

The reduction of price effective Apr. 1 on hard coal, and a reduced price on Colorado and other coals, has caused dealers and steam users to look for reduced prices on all grades; therefore little buying is done beyond enough to take care of the immediate future. Contracts of all kinds are held up pending word from Dr. Garfield outlining a future sales policy.

During the past week numerous buyers from the Northwest have been in this market trying to get a line on high-grade southern Illinois coal. Particularly is there an eager Northwest market for fine coal under 2 in.

Quotations in the Chicago market are as follows, per net ton f.o.b. cars at mines:

	Williamson and Franklin	Saline and Harrisburg	Fulton and Peoria	Springfield	Carterville	Grundy, La Salle, Bureau and Will
Steam lump	$2.65@2.80	$2.65@2.80	$3.00@3.15	$2.65@2.80	$2.65@2.80	$3.35@3.50
Domestic lump	2.65@2.80	2.65@2.80	3.00@3.15	2.65@2.80	2.65@2.80	3.35@3.50
Egg or furnace	2.65@2.80	2.65@2.80	3.00@3.15	2.65@2.80	2.65@2.80	3.35@3.50
Small egg or nut	2.65@2.80	2.65@2.80	3.00@3.15	2.65@2.80	2.65@2.80	3.35@3.50
Stove	2.65@2.80	2.65@2.80	3.00@3.15	2.65@2.80	2.65@2.80	3.35@3.50
Chestnut	2.65@2.80	2.65@2.80	3.00@3.15	2.65@2.80	2.65@2.80	3.35@3.50
Pea	2.65@2.80	2.65@2.80	3.00@3.15	2.65@2.80	2.65@2.80	.....
Washed egg	2.65@2.80	.....	.....	.....	2.65@2.80	3.35@3.50
Washed stove	2.65@2.80	.....	.....	.....	2.65@2.80	3.35@3.50
Washed nut	2.65@2.80	.....	.....	.....	2.65@2.80	3.35@3.50
Mine-run	2.40@2.55	2.40@2.55	2.75@2.90	2.40@2.55	2.40@2.55	3.10@3.25
Screenings	2.15@2.30	2.15@2.30	2.50@2.65	2.50@2.65	2.15@2.30	2.85@3.00
Washed slack	2.15@2.30	2.15@2.30	2.50@2.65	2.50@2.65	2.15@2.30	2.85@3.00

	Smokeless					
	Clinton and Sullivan	Knox and Greene	Eastern Kentucky	Pocah. and W. Va.	Penna.	Hocking	West Va. Splint
Dom. lump	$2.65@2.80	$2.65@2.80	$3.10@3.25	$2.60@2.75	$2.70@2.85	$3.05@3.20	$2.85@3.00
Steam lump	2.65@2.80	2.65@2.80	3.10@3.25	2.60@2.75	2.70@2.85	3.05@3.20	2.85@3.00
Egg	2.65@2.80	2.65@2.80	3.10@3.25	2.60@2.75	2.70@2.85	3.05@3.20	2.85@3.00
Small egg or nut	2.65@2.80	2.65@2.80	3.10@3.25	2.60@2.75	2.70@2.85	3.05@3.20	2.85@3.00
Mine-run	2.40@2.55	2.40@2.55	2.85@3.00	2.45@2.60	2.45@2.60	2.70@2.85	2.60@2.75
Screenings	2.15@2.30	2.15@2.30	2.60@2.75	2.10@2.25	2.10@2.25	2.55@2.70	2.35@2.50

MILWAUKEE

Coal dealers awaiting official advices as to future price and delivery regulations. Consumers requested to place order for next season on or before Apr. 1.

Watchful waiting is the order of the day in Milwaukee coal circles. The return of W. N. Fitzgerald, state fuel administrator, who went to Washington to confer with the Federal coal authorities, is awaited with great interest. When he arrives, a meeting will be arranged and an understanding reached. All express a willingness to conform to any Government regulation which may be imposed. This has been the attitude of all the old dock companies and retailers since the fuel agitation began, but there are some mushroom companies which operate dumps alongside side-tracks which have enjoyed war-time profits on Illinois coal. Coal costing $4.50 on track here has been sold right along at $7.50 with the extra charges for delivery. Regulation does not seem to have disturbed them.

The state fuel administration office is urging every consumer to place orders for coal or coke with his regular dealer on or before Apr. 1. The consumer will be allowed an amount sufficient to last until Mar. 31, 1919. Dealers are to deliver two-thirds of the annual requirement of anthracite, and when all consumers have received this allotment, the remainder will be forthcoming. No restrictions are being advanced as to bituminous coal. The general purpose of the regulations is to secure a broader and more equitable distribution of fuel than in the past.

According to officials of the State Council of Defense more wood will be consumed in Wisconsin the coming year than ever before. This is expected to relieve the coal supply materially. All over the state arrangements are being made to heat school houses, city halls and other public buildings with wood.

ST. LOUIS

Local conditions extremely easy, with plenty of coal and a tendency to cut prices in the Standard field. Car conditions extremely bad on the M. & O. and I. C. Practically no steam demand, and domestic coal dragging heavily. Pennsylvania anthracite shipments good, with nothing from Arkansas.

The local situation is one that is causing worry to the operators in the Standard field. Prices of $2.50 and under have been freely quoted this week, although in many instances these quotations have been made at the $2.65 price with a commission paid for buying, so that the sales record would show the Government price. This has been done to some extent on the short-line roads entering St. Louis and on some of the trunk lines.

The L. & N. R.R. is still embargoed against Chicago, and this coal coming in here heavily has demoralized the local market. The Wabash and C. & A., the two principal carriers from the St. Louis market to Chicago, are embargoed on account of having too much coal at Chicago, they claim. The result is that there are several hundred cars of coal held at East St. Louis which were destined to Chicago, with no other place to move them.

The Missouri Fuel Administrator refuses to touch the coal, and the Illinois Administrator ignores the demand of the local roads for relief. It appears as if the Chicago market is too heavy and that in order to keep it firm the railroads are tying this stuff up at the St. Louis end, thereby breaking the local market.

There is little domestic demand locally for Standard coal, and the steam call is not as good as it should be. There seems to be a feeling that the price of coal will come down on Apr. 1, especially in the Standard and Mt. Olive fields, and the buyers are holding off. Conditions in the Mt. Olive field are somewhat similar, although there is no demurrage coal there. What does not move into St. Louis can be moved north, and the embargo will not affect it.

The railroads still continue to draw heavily on these fields, and that is the principal reason why both of these fields have not practically suspended operations.

Conditions are much better in the Duquoin field, and this coal continues to move north and west; but the car supply on the Illinois Central is extremely short.

In the Carterville districts of Williamson and Franklin County there is beginning to be a surplus of domestic sizes, but the steam call is extremely good. Car supply is not good on the Illinois Central, nor on the Iron Mountain, but the C. B. & Q. and C. & E. I. are doing well. Working conditions in a general way are improving.

One St. Louis company, it is understood, has 5000 tons of Pennsylvania anthracite bought, which is to be shipped before Apr 1. This is coming in in good volume, and a few other companies have small tonnages moving in. There is no smokeless booked for this market. A little Arkansas is commencing to drift in, but not in any great volume.

The local market is, per net ton f.o.b. mines:

	Williamson and Franklin County	Mt. Olive and Staunton	Standard
6-in. lump	$2.65@2.80	$2.65@2.80	$2.65@2.80
3x6-in. egg	2.65@2.80	2.65@2.80	2.65@2.80
2x3-in. nut	2.65@2.80	2.65@2.80	2.65@2.80
No. 2 nut	2.65@2.80	.....	.....
No. 3 nut	2.65@2.80	.....	.....
No. 4 nut	2.65@2.80	.....	.....
No. 5 nut	2.15@2.30	.....	.....
2-in. scrgs	2.15@2.30	2.15@2.30	2.15@2.30
2-in. lump	.....	.....	2.65@2.80
3-in. lump	.....	2.65@2.80	.....
Steam egg	2.65@2.80	2.65@2.80	2.65@2.80
Mine-run	2.40@2.55	2.40@2.55	2.40@2.55
Washed:			
No. 1	$2.65@2.80	$2.65@2.80	.....
No. 2	2.65@2.80	2.65@2.80	.....
No. 3	2.65@2.80	2.65@2.80	.....
No. 4	2.65@2.80	2.65@2.80	.....
No. 5	2.15@2.30	2.15@2.30	.....

Williamson & Franklin Co. rate is 87½c.; other fields, 72½c.

SEATTLE

Coal operators of state hope for peace pact in early adjustment of mine-price controversy with Fuel Administrator.

Announcement that H. A. Garfield, United States Fuel Administrator, had revised anthracite coal prices to take effect Apr. 1 and had urged consumers to lay in an early supply of coal for next winter, is interpreted by coal operators in the State of Washington to be a forerunner of an early adjustment of the mine-price controversy in this state.

Some of the mines have already felt the effect of a decrease in the demand for coal, and it is expected that consumption will decline steadily from now until fall. A falling off in the coal consumption will make it difficult to hold men at the mines, and a greater use of coal is urged both for the benefit of the mines and their men, and also to ease up on the demands for fuel oil in this territory.

General Statistics

CHESAPEAKE & OHIO

Following is a comparative statement of the coal and coke traffic from the New River, Kanawha and Kentucky districts for the month of January, 1918:

COAL

To	January 1918	January 1917
Tidewater (bituminous)	231,455	512,952
East (bituminous)	322,550	273,470
West (bituminous)	839,414	1,185,476
Company's fuel (bituminous)	188,008	207,704
From connections (bituminous)	112,477	168,078
Total	1,793,904	2,348,220
Anthracite	3,470	718
Total coal movement	1,797,374	2,348,938

COKE

To	January 1918	January 1917
Tidewater	.....	.....
East	21,538	15,496
West	18,197	25,512
Total	39,735	41,008
From connections	5,915	6,352
Total coke movement	45,650	47,360

NORFOLK & WESTERN

Below is a statement of the coal and coke shipments over the Norfolk & Western lines during the month of January, 1918, as compared with January, 1917. The figures are in net tons:

Shipments	January 1917	January 1918
Tidewater foreign coal	200,482	76,644
Tidewater foreign coke	2,894	.....
Tidewater coastwise coal	240,286	206,079
Other dom stic coal	2,404,817	1,615,312
Other domestic coke	203,983	226,157
Totals	3,052,462	2,124,192